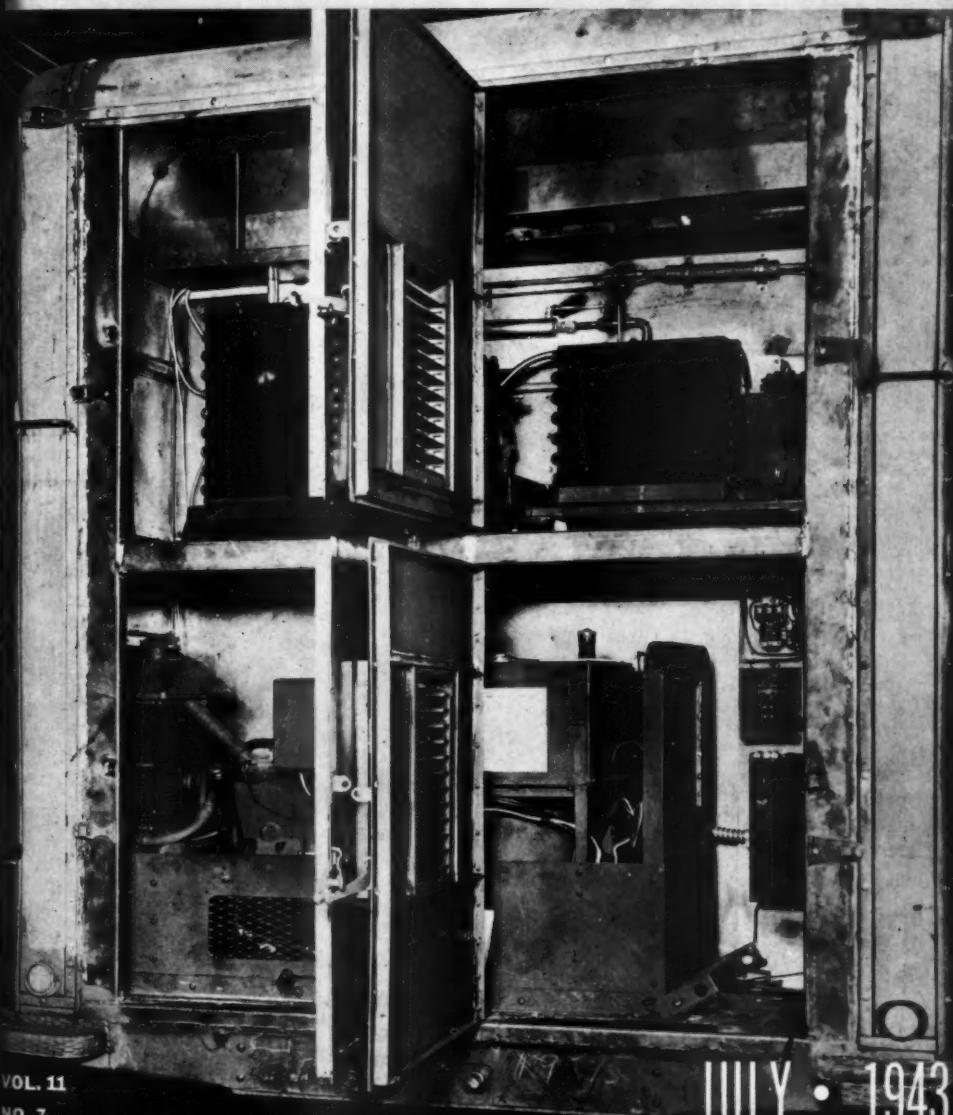


# The Refrigeration Service Engineer



VOL. 11  
NO. 7

JULY • 1943

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The news is getting round about Chicago's new replacement seal for Coldspots . . . how easily you install it . . . its triple protection against leakage . . . and its self-adjusting sleevelock. One trial will convince you that Chicago has rung the bell again with the right replacement seal for Coldspots.

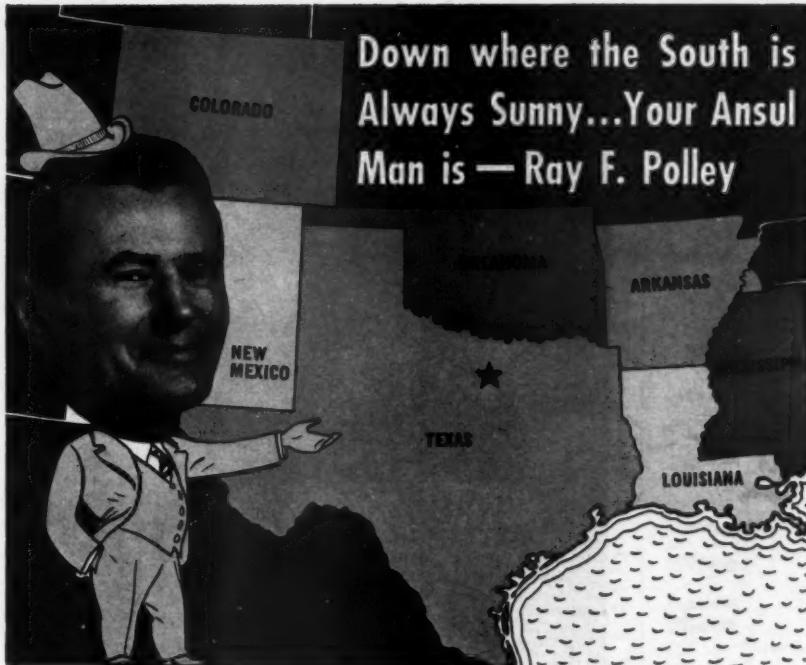
The complete Chicago line includes replacement seals for all standard refrigeration compressors.

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Yes, in the states of Colorado, New Mexico, Oklahoma, Texas, Arkansas, Louisiana, Mississippi or in the city of Memphis, Tennessee, Ansul service to the refrigeration industry is personified by none other than Ray F. Polley.

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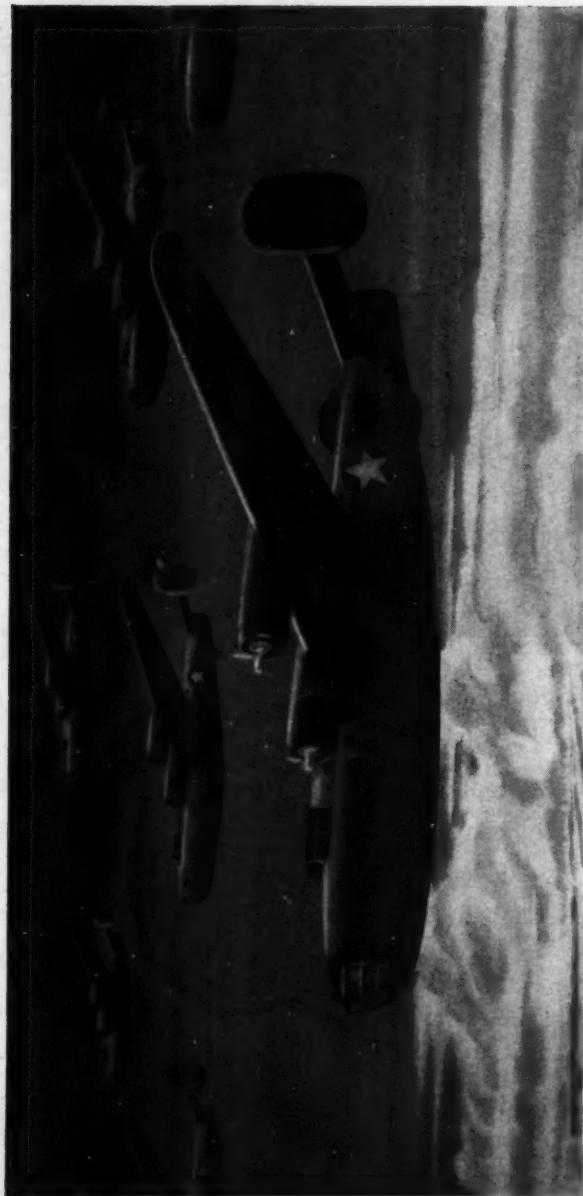
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July, 1943

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Delicate instruments and accurate bomb and gun sights must function perfectly if the mission is to be successful.

One way in which our armed forces keep fine instruments in adjustment and working smoothly is by keeping them in air conditioned store rooms when off duty. This keeps rust and corrosion from destroying fine watch-like balance and assures perfect operation at a moment's notice. This is but another important contribution that the refrigeration and air conditioning industry is making to Victory.

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• • •

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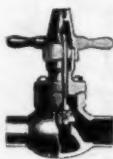
VALVES



Balanced-Action  
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Wing Cap  
Valve  
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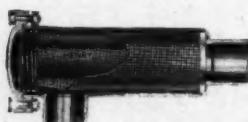
Snap-action  
Diaphragm



STRAINERS



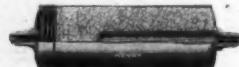
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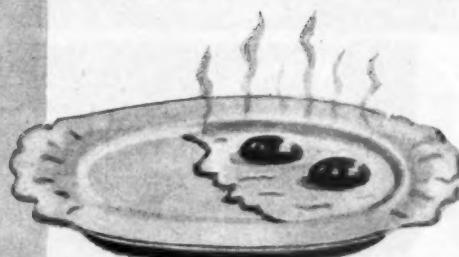
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## How Hard Is "Hard"?



*One of a series of actual photographs taken in the Alco plant.*

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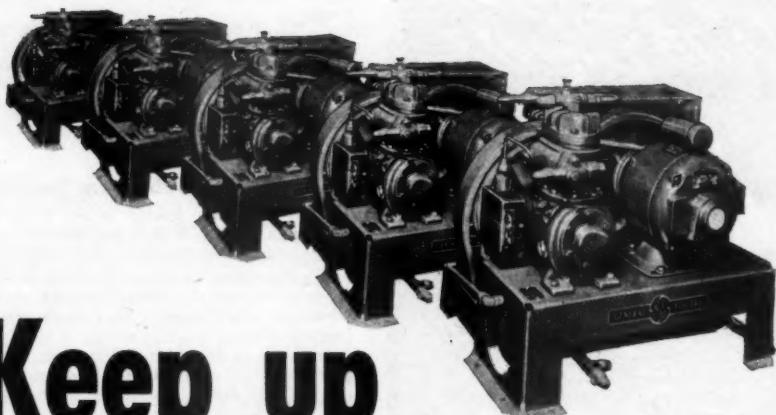
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of Engineered  
Refrigerant  
Controls**

Because hardness is only comparative, there is no such thing as an "absolute hardness scale." Hardness is therefore measured against a table of standards, such as the Rockwell scale, determined by the action of the Rockwell Hardness Tester.

In the fabrication of metal parts, to facilitate working, or for functional reasons, it is often desirable to hold the metal within certain limits of hardness. The "hardness" itself, or other physical properties with which it may be associated, can be controlled by periodic measurements on a hardness tester. The readings obtained may indicate the necessity of heat-treating, annealing, or a change in the working procedure.

By the Rockwell method used by Alco, measurement is based upon the increase of penetration by a diamond-tipped cone, due to an increase in load. Only 0.00008" penetration into the metal gives a reading of nearly 4 degrees on the dial circle. By using this precision machine, when Alco's standard of hardness for a certain part is set at "Rockwell C-52-54," all such parts **must** test within these limits.

**ALCO VALVE COMPANY — 857 Kingsland Avenue, St. Louis, Missouri**



# Keep up the good work!

OWNERS of commercial refrigeration equipment would be in a tough spot today were it not for you service engineers. With new equipment no longer available—and parts sometimes hard to get—the job you are doing in helping to prevent breakdowns and in keeping existing equipment running is an outstanding contribution to the welfare of the nation!

Many of you are also contributing to the war effort by helping to keep the refrigeration equipment of war industries at peak operating efficiency. For your own sake, don't neglect this opportunity to make new service contacts. Industrial applications of refrigeration equipment are growing by leaps and bounds and you may find many opportunities to suggest new installations of G-E "Scotch Giant"

condensing units for now and post-war.

Included in the full line of G-E "Scotch Giant" condensing units are models from 1/6 to 125 horsepower—for low temperature work down to minus 130 F, in single or multi-stage systems. The quality and dependability of G-E refrigeration equipment shows up clearly today under wartime operating conditions.

After the war, commercial and industrial refrigeration will continue to grow in importance. The fine job you are doing today—and the new contacts you are making—should help you to broaden your field, too. Keep up the good work!

*General Electric Co., Air Conditioning  
and Commercial Refrigeration Division,  
Section 3717, Bloomfield, N. J.*

**GENERAL ELECTRIC**  
"Scotch Giant" Condensing Units

# IMPERIAL

## Data Sheets

### 1. HANDLING TUBING

COPPER tubing as it is furnished from the mill is bright on the outside and very smooth and bright on the inside. It is usually packed in a tight fitting box or wrapped so that the atmosphere will not cause it to corrode.

If copper tubing is kept on a shelf for a long period of time it will be found that it has become quite hard. Every time a piece of copper tubing is bent it will become harder and if it has been handled many times, it will probably be necessary to anneal it before it can be used. This is particularly true if it is necessary to bend it to some desired shape or if the ends are to be flared without splitting.

#### Annealing Copper Tubing

In annealing copper tubing the process is just the opposite to that in steel. The copper tubing is heated to a dull red heat and cooled in water. It can be cooled by the air cooling process, but water cooling has a tendency to brighten the copper and to remove some of the oxidation that may occur during the process of annealing.

In annealing it must be remembered that copper melts at approximately 1900° Fahrenheit so that if an oxy-acetylene torch, or if a very hot flame is used, care must be taken or a hole will be burned in the tubing.



• This is the first of a series of imperial data sheets that will be published from time to time in the form of advertisements.

The material which will deal mainly with tubing connection practice has purposely been simplified so that the new man on service and installation work can easily understand it. However the experience gained in the handling of the

#### Annealing Aluminum Tubing

While aluminum tubing is not used as frequently as copper tubing it can be used in many places where copper is not applicable.

It is usually soft and easy to work and seldom hardens like copper tubing. However, aluminum tubing can be secured in various grades of hardness.

To anneal aluminum tubing use the same process as annealing copper tubing. Extreme care must be taken, however, as aluminum melts at a much lower temperature than copper, namely at approximately 1217° F. If the flame is kept on the tubing too long the workman may be surprised to see the tube completely collapse.

#### Uncoiling the Tubing

Tubing is usually coiled so that before using it is necessary that it be straightened out. Before straightening determine the amount of tubing that is required. Place the coil on a bench or on the floor and hold the end of the tubing with one hand and with the other hand unroll the coil.

You should not try to uncoil the tubing by pulling it out sideways from the coil in its spiral form as this would put a twist in the tubing, have a tendency to throw it out of round and harden it. It should always be remembered that working tubing in any way will have a tendency to harden it.

#### How to Straighten Tubing

Even after tubing is carefully uncoiled it is not often very straight and it is necessary to use other methods to take out kinks in the tubing. Some of the methods used are to lay the tubing on a smooth floor or bench and use a board flatwise, striking the high spots of the tubing down on the floor or bench. Care must be taken that the tubing is not struck too hard so that flat spots will be formed. It must be remembered that soft tubing is very easily dented and if dented the tubing may collapse at the dent when being bent.

Another method of straightening long lengths is to slap it against the floor, turning the tubing as the slapping operation continues. When one man does this it is necessary to fasten the tubing at one end. The job is simplified when two men

# IMPERIAL

STRAINERS • DEHYDRATORS • VALVES • FITTINGS • FLOATS • CHARGING LINES

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many Imperial tube bending contests indicated that even the old timers would find something of interest in this basic information on how to connect up tubing. It is therefore presented by Imperial as a small contribution toward the problem of handling service work when both materials and manpower for the refrigeration industry have reached a dangerously low point.

can handle the straightening of a long piece by the slapping method.

### Cutting the Tubing

There are several well known methods of cutting tubing and probably the oldest and most commonly known is to saw it with a hack saw. The objection to sawing with a hack saw is that it is hard to saw the tubing off straight and the saw cuttings get into the inside of the tubing and sometimes cause trouble.

Another method, particularly on small tubing, is to nick it all the way around with a file and then break it off. The objection to this, of course, is the fact that a ragged edge is produced which must be trimmed with a file so that the end is square to make a good flare or to make up properly with any type of fitting.

The best way to cut tubing of any kind is by the use of a tube cutter. There are several well known tube cutters and most of them very satisfactory. However, the best type is the one that has two rollers on which the tubing rolls and the cutting wheel does the cutting. This tube cutter is fed gradually into the tube while the tube cutter is revolved around the tube. This results in a right angle cut which has no ragged edges and if properly made, very little burr on the inside of the tube. If the tube cutter is fed too fast, a burr will be produced on the inside of the tube.

In cutting aluminum or other soft tubing it is very essential that the tube cutter be fed slowly because the softer the tubing the more the tendency to throw a burr on the inside of the tubing, and the more necessary it is that the burr be removed before any flaring is to be done.

Another advantage about cutting with a tubing cutter is that it makes a small chamfer on the outside of the tube which facilitates making up a solder joint or a compression type of joint, inasmuch as it forms a lead which makes it easy to put the tubing into the fitting.

One of the most recent developments in tubing cutters is the flare groove. On tubing cutters with rollers a groove is cut in both rollers so that if you desire to remove the flare from the

# IMPERIAL

## Data Sheets

### TUBE CUTTING

2.



end of a piece of tubing the flare rests in the groove and the cutter will cut at the bottom of the flare.

Sometimes the flare on a piece of tubing will crack. The ability to cut off this flare, close to the flare, may make it possible to reflare the tubing and use it again. This is particularly important where a piece of tubing has been incorrectly cut for length and it is desired to cut off the flare with minimum loss of length.

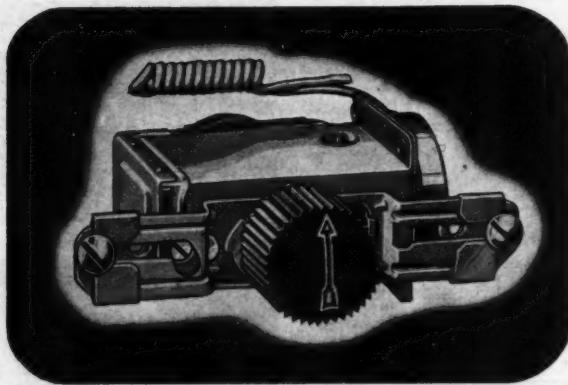
A good tube cutter is an essential part of a service engineer's kit and it should be properly cared for and not thrown around. If the tube cutter is sprung out of shape the wheel will probably not track properly around the tubing and will cut a thread instead of staying in the same groove. This of course ruins the action of the tube cutter.

On heavy tubing, it is sometimes advisable to use a hack saw and it is good practice to use a sawing vise to hold the tubing. These vises are made so that the tubing is clamped in them and the saw is guided in a slot so that a perfectly square cut will be made. In the larger sizes of tubing it is very easy to see any chips that are deposited on the inside of the tube and it is therefore not objectionable to use a hack saw for cutting the tubing.

THE IMPERIAL BRASS MFG. CO., 1204 W. Harrison St., Chicago, Ill.

*Air Conditioning and  
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*Ranco Inc.*

COLUMBUS, OHIO

# The Refrigeration Service Engineer

Vol. 11

No. 7

July, 1943

A Monthly Illustrated Journal Devoted to the Interests of the Refrigeration Service Engineer in the Servicing of Domestic and Small Commercial Refrigeration Systems and Oil Burners

Official Organ  
REFRIGERATION SERVICE  
ENGINEERS SOCIETY

## The Cover

View of refrigerating equipment in kitchen trailer of mobile kitchen used by the Army to feed soldiers in the field. Story on page 44.

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SERVICE ENGINEER

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# The Refrigeration Service Engineer

Vol. 11, No. 7

CHICAGO, JULY, 1943

\$2.00 Per Annum

## Testing for Refrigerant Leaks

**A** NEW procedure for locating refrigerant leaks, developed by Stewart-Warner, leads the way in the simplification and streamlining of one of the most common service operations. By eliminating large sections of the Dual-Temp system at a time, the procedure is shortened. Such patterns of search might well be adapted to other makes of refrigerators. Stewart-Warner models on which this test can be used are: 660, 860, 661, 671, 861, 871, 681, 691, 881, 891, 662, 672, 862, 872.

**T**HE presence of Freon can be detected, even in minute quantities, by using a Halide Torch. Two types of Halide torches are shown below.

These torches can be purchased through refrigeration parts jobbers or your Stewart-Warner distributor.

For best results, keep the torch clean, especially the "search tube" and the detector head. The flame should be adjusted to the correct height (as recommended by manufacturer) and the small copper plate (in the path of the flame, must not have been melted away by excessive flame height).

The torch flame should be a clear pale blue and free of any surrounding yellow coloring when it is operating in the air of the room.

Small amounts of Freon will cause flame to turn green.

Large amounts of Freon will cause flame to turn deep violet.



Alcohol Torch

Acetylene Torch

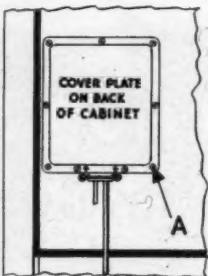
### Locating the Leak

Torch search tube must be in actual contact with suspected part. Hold at each point for about five seconds. Check all around a flare joint—merely checking at one point may not show up a leak on other side of joint.

Look for oil on suspected parts. The presence of oil generally indicates the location of a leak.

### TEST NO. 1

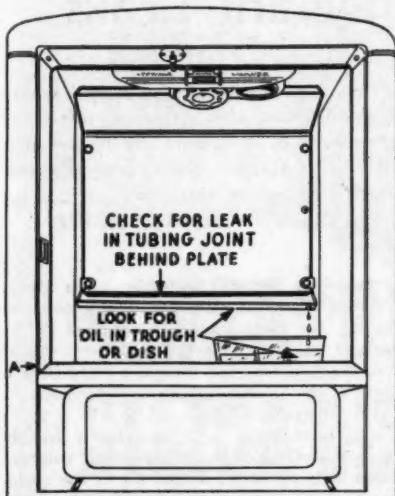
Remove screw labelled "A." Place leak detector search hose against the hole. If Freon is present, remove entire plate and some of the insulation. Then make test No. 2. If Freon is not present, omit tests No. 2 and No. 3; proceed with test No. 4.



### TEST NO. 3

This test only for Models: 660, 661, 671, 860, 861, 891.

Before opening the door, lift edge of door gasket at point 11 inches from bottom of door (See point "A" below) and check for Freon in air of top compartment.



If above tests do not show up the leak, remove 4 bolts holding plate to back wall. Pull plate forward so that all tubing on back surface can be carefully checked.

The tubing on the back of plate looks like this:



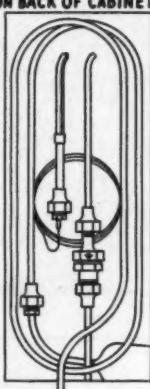
If the leak is not found in the food compartment, proceed with test No. 5.

### TEST NO. 2

Check these flare connections. If leak is not at these joints and there is Freon in the insulation, proceed as follows:

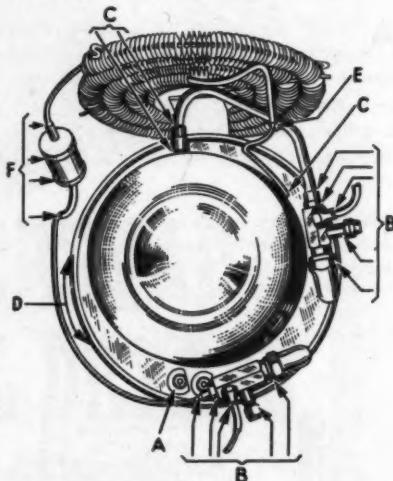
Make test No. 3 only if model No. is one of these: 660, 661, 671, 860, 861, 871. For all other models, proceed with test No. 5.

### REMOVE COVER PLATE ON BACK OF CABINET



### TEST NO. 4

Check all the following points around the sealed unit:



A. Electrical Terminals. Leaks at this point are often corrected by tightening bottom terminal nut.

B. Shut-off valve caps, stem and tubing connections.

C. Point where tubing enters dome.

D. Around entire welded rim.

E. At condenser in front of unit.

F. At drier connected to condenser.

### TEST NO. 5

If the leak is not found at the points mentioned here, build up much higher pressure in the system, then repeat these tests.

To increase the pressure:

A. Place trays of hot water in the locker.

B. Using two 60-watt light bulbs on an extension cord, place one in each compartment and close the door.

C. Allow inside of refrigerator to warm up for 30 minutes.

D. Connect a gauge to high-side valve to determine pressure in the system. Pressure above 100 lbs. is preferred.

#### TEST NO. 6

If leak is not found after making tests 1 to 5, use the procedure described on this page.

This article is a section of the new Stewart-Warner Service Manual covering the 1940, 1941 and 1942 Dual Temp models, as well as other Stewart-Warner refrigerators manufactured in those years. This valuable guide to servicing the radically different Dual Temp will be mailed free of charge to the first thousand readers of this publication who send their requests to:

Stewart-Warner Corporation  
228 N. La Salle Street  
Chicago, Illinois

Send in your request on your letterhead or enclose your business card and please indicate whether you have ever serviced any Stewart-Warner Dual Temp refrigerators.

If refrigerator was running continuously: Turn it off and add some Freon to the system to build up internal pressure before making following tests.

If refrigerator was not running continuously: Turn it off and proceed with the following tests. Do not open the refrigerator door until requested to in test No. 8.

#### Freon in the Insulation

If there is Freon in the insulation—between the walls of the cabinet, and the leak is not found at points mentioned in tests No. 1 through 5: You may be inclined to suspect the tubing around the locker (or the upper compartment coils).

However, do not assume that the leak is in the locker coils (or the upper compartment coils) merely because there is Freon in the insulation. You must actually trace the source of the leak as closely as possible since a leak in the freezing locker coils is a very rare occurrence. Remember that Freon is a heavy gas and will settle in the insulation near the bottom (around the locker) even

though the leak may be at the D.P.C. valve or upper compartment coils.

Since the insulation between the walls is saturated with Freon it will not be possible to make a positive leak test until the Freon is cleared out.

To clear the Freon out of the insulation it is first necessary to stop more Freon from getting into the insulation via the leak. To accomplish this, allow the entire Freon charge to escape at the compressor valves.

Meanwhile use an electric fan or vacuum cleaner (preferably the tank type) to blow out Freon remaining in the insulation.

A tank type vacuum cleaner, with tubing connected so as to pull air and Freon out of the insulation, is the quickest and most efficient method. The vacuum cleaner will generally clear out all traces of Freon in 30 minutes to one hour. An ordinary electric fan placed at the opening to the valve compartment and arranged to blow air into the compartment generally requires 24 hours to adequately clear out traces of Freon in the insulation.

The room should be well ventilated when this operation is performed. Before proceeding, you must be sure that the insulation does not contain even small traces of Freon. The time required to adequately clear out the Freon will be well rewarded since subsequent leak checks generally give very positive results.

Now connect a Freon drum to the low side gauge connection (on the unit) and again build up pressure in the system. Proceed to check for the leak at both ends of the accumulator and around the locker coils (or upper compartment coils). Push insulation aside so that search tube can be brought in actual contact with the coils. Since the insulation did not contain Freon when you started this test, you should now be able to quickly determine where the gas is coming from.

#### Procedure for Locating Small Leaks

Should you fail to find the leak after performing the above tests and there was evidence to indicate that there must be a leak at some point in the system, it would then be advisable to follow this suggestion:

Try to obtain a small drum of carbon dioxide ( $CO_2$ ) or nitrogen ( $N_2$ ) and a pressure reducing valve so that pressure can be reduced to approximately 250 lbs. Do not use any other gas—carbon dioxide or nitrogen are the only gases that are recommended.

## Caution

You must use a pressure reducing valve on the drum of carbon dioxide or nitrogen. The approximate pressure in the drum is:

Carbon Dioxide ..... 1,000 lbs.  
Nitrogen ..... 2,200 lbs.

The refrigeration system is not designed to withstand this pressure and if a pressure reducing valve is not used an explosion is possible.

Connect this drum of gas (through a pressure reducing valve and a drier) to the low-side gauge connection on the unit and build up the pressure in the system to about 250 lbs. The high pressure mixture of this gas and the Freon already in the system will now permit you to make a very conclusive test of all points referred to in previous tests.

After the leak has been found and corrected, the carbon dioxide or nitrogen must be removed from the system. The procedure following entitled "How to Remove Air" will apply equally well to the removal of the carbon dioxide or nitrogen.

Before recharging the system, install a drier (Stewart-Warner No. 600778), since moisture may have gotten into the system at the time the leak occurred.

## Air in the System

### How Air May Enter the System:

1. If a leak occurs on the low side of the system, refrigerant will escape. When the shortage reaches a certain point, the low side pressure becomes a vacuum and the compressor will pull air into the system through the leak.

2. A replacement part such as tubing assembly, evaporator plate or freezing locker may contain air. Be sure to blow Freon through these parts to remove air before installation is made.

*Symptoms of Air in the System.* Air in the system causes higher than normal high side pressure. If air is being drawn in through a low side leak, the low side pressure will be zero or a vacuum. If the charge is nearly normal, the low side pressure will be higher than normal.

## Important

If head pressure is extremely high (sufficient to cause gauge needle to go off scale), the cause is a restricted (plugged) capillary tube.

*How to Remove Air:* The conventional method of "purging for air" at the com-

pressor high side valve is generally not satisfactory when used on a capillary system since air does not remain trapped in the condenser. A more positive method of removing air is outlined below and its use is recommended in all cases where there is a sufficient amount of air in the system to cause appreciably higher than normal head pressure.

You will need the following items to perform this operation: A  $\frac{1}{4}$  in. flare "T", 12 inches of  $\frac{1}{4}$  in. tubing with a flare nut on each end, and a small drum of Freon 12.

1. If there is a leak in the system, the leak must be found and corrected before using the following procedure (See page 14 for method of locating leaks).

2. Turn off refrigerator—leave food door open so compartments will warm up.

3. Close compressor high side valve by turning clockwise as far as it will go.

4. Disconnect capillary tube flare nut from high side shut-off valve and connect capillary to one side of a  $\frac{1}{4}$  in. flare "T". (Refrigerant will escape slowly through open capillary.)

5. Using a short length of tubing, connect another opening of the "T" to the gauge connection on low side shut-off valve.

6. Connect third opening of the "T" to a drum of Freon.

7. Be sure low-side shut-off valve is in maximum counter-clockwise position.

8. Open the valve on the Freon drum. Allow small amount of gas to enter tubing and build up pressure. Then check for leaks at the connections that were just made. This leak check is extremely important as leaks will allow more air and moisture to enter the system.

9. Be sure valve on Freon drum is shut off after you finish the leak check.

10. Open the high side compressor valve by turning counter-clockwise as far as it will go. Refrigerant will now escape through the open connection on the high side valve. Leave this connection open to the rooms, covering it only with a cloth to catch any oil which may foam out.

11. Turn low side shut-off valve to an intermediate position—neither open or closed.

12. Start refrigerator and let it run at least  $\frac{1}{2}$  hour (preferably one hour). Be sure all frost in locker has melted.

13. Break the vacuum, now existing in the system, by opening the valve on the Freon drum and stop the compressor at the same time.

14. Turn low-side valve counter-clockwise as far as it will go.

15. Allow valve on Freon drum to remain open and Freon should continue to enter the system for at least five minutes. Five minutes are required since gas goes through capillary tube very slowly and if system is opened prematurely, there may still be a partial vacuum which would permit air to be drawn in again.

16. Close valve on Freon drum and disconnect Freon drum, "T" fitting and capillary tube, from low side gauge connection.

17. Reconnect capillary tube to high side valve.

18. Connect Freon drum to low side gauge connection.

19. Start compressor and then add a full refrigerant charge to the system by charging from the drum now connected to the low side.

20. After completing the job, check again for leaks.

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### NEW PRICE CEILINGS ON ICE REFRIGERATORS

A NUMBER of sales concerns in the mechanical refrigerator industry will be interested in an order by the OPA effective June 8, establishing retail price ceilings on new ice refrigerators. The ceilings apply specifically to individual models in each state covering sales by retail stores and all other sales at retail as well as by ice companies and by retail establishments controlled by ice companies.

Prices are established on each individual model for each manufacturer for each state. Tables in the order set forth the ceiling price for each model in each state. The complete order (MPR 899) together with current supplements and any additional supplements which may be issued may be obtained from the Office of Price Administration in Washington and the various regional offices of OPA.

In addition to the models specifically listed in the order, a supplemental order effective June 30 provides that models which no longer are manufactured but which are carried in stock will be sold under the pricing provisions of the General Maximum Regulations which means that they may be priced no higher than the maximum price at which they were offered for sale in March 1942. New models put on the market will receive authorization on price from OPA.

### TRADE ACCEPTS STANDARDS FOR COMMERCIAL CONDENSING UNITS

STANDARDS for commercial electrical refrigeration condensing units have been accepted by the trade for new production beginning May 15, 1943. Purpose of the Standard as set forth in its publication by the United States Department of Commerce, is to establish minimum standard specifications and methods of test for commercial electric refrigeration condensing units for the guidance of manufacturers, distributors, installers, contractors and users.

The Standard covers requirements, rating, motor loading and testing of air-cooled and water-cooled, belt driven commercial electric refrigeration condensing units in 1/5 to 8 hp. sizes, and water-cooled units of 5 hp. using methyl chloride, Freon 12 or SO<sub>2</sub> refrigerants. This Standard covers all requirements, including air conditioning. It covers minimum requirements for controls, shutoff valves and receiver tank capacities. It also covers a uniform method of guaranteeing compliance with the Standard and installation and service pointers. For purposes of field selection, the machines are divided into three groups: low temperature, medium temperature, high temperature.

Of some interest to service men is the recommendation that a copy of installation and service instructions be furnished with each refrigeration condensing unit. It points out that the unit is constructed of high grade materials, built by modern methods, every part carefully inspected, and the entire unit tested. Careless or thoughtless installation methods it says may nullify all the care, expense and planning that went into the building of the unit.

A standing committee representing the manufacturers, distributors, installers, users and laboratories and general interests, has been appointed which will review, prior to circulation for acceptance, revisions proposed to keep the Standard abreast of progress.

This commercial Standard has been accepted as their standard of practice in the production, distribution and use of commercial electric refrigeration condensing units by the following organizations representing the refrigerating industry: American Institute of Refrigeration; National Refrigeration Supply Jobbers Association; and the Twin Cities Chapter, St. Paul, Minn., of the Refrigeration Service Engineers Society.

# Service Pointers

## Practical Service Men Tell How They Meet New Repair and Service Problems

UNDER this department a number of practical service men show a commendable cooperative spirit in passing on to others information on special repair and service problems that may be of much value in these trying times of material scarcity and shortage of competent help. We believe if more readers would send similar contributions, making THE REFRIGERATION SERVICE ENGINEER a medium for the exchange of information on service, much benefit would accrue to all. Similar contributions are solicited from all readers.

### PERSONALIZED POSTAL CARD SAVES MANAGER'S TIME

AN interesting and effective use of a penny postal card has been originated by J. Lawrence Hall, refrigerator service man of Nashua, N. H. Mr. Hall writes that there are various reasons why he has made use of this style card.



Prompted by the need of sending a simple message, he has used the standard Government postal card. Realizing that a plain card does not present an impressive appearance, he has embellished it with the additional border, together with the RSES and GE emblems as shown below.

In Mr. Hall's organization, he explains further, the personnel consists of only three steadily employed men and himself. He makes as many calls a day as any one of these men, plus ordering, selling and in general running the business, therefore his time for office work is very limited. He has found that in less time than it would take to dictate a letter and sign it, he can put a simple message on a card and have it in the corner mail box. This also saves the office girl's time. The card is mailed NOW and the expense is moderate.

Another use is to have self-addressed cards left with or enclosed in an envelope to customers who live in outlying districts, asking them to advise promptly if their refrigerating units are not working satisfactorily.

This is an idea that might be used to advantage by other service organizations.

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### KARGE REFRIGERATING MACHINE

NOTE: In the June issue, a communication was published from a reader asking for some information regarding the Karge Refrigerating Machine, formerly manufactured by the Karge Refrigeration Co. of Brockport, N. Y. Another reader, Thomas Dunne, Macedon, N.Y., submits information on this unit as follows:

"I am writing in regard to an article in your June, 1948, issue about L.E.B.'s letter about the Karge refrigerating machine. Now, if you will have him get in touch with me, I can help him, as I worked for the company for 10 years doing service work. The machine is charged with methyl chloride (14 lbs.) on that particular model, but I can explain it to him in a letter, and that machine can give good service yet, as I have a number of them in running condition at the present time."

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## REBUILDING BRONZE BEARINGS

By Henry Senn

I THINK I can answer the question by D. F. in THE REFRIGERATION SERVICE ENGINEER of June, 1948, on rebuilding bronze bearings.

I have had a little experience in that line since the war started in 1, 1½, 2 and 3 h.p. motors. I knock the bearing out of housing and build up inside with a good grade of bronze welding rod, and let bearing cool to original temperature; then replace in housing and turn it on a lathe. I turn within about two thousandths of one inch with sharp cutting bit. Then finish with polishing bit to fit shaft. Some of those motors have been running for a year or longer without a service call. Be sure and remove bearing from housing before building up.

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## REPAIRING BROKEN HARDWARE

By Brooks C. Frantz

I N the May issue of REFRIGERATION SERVICE ENGINEER, the question was asked how to repair broken hardware. I have used both Easy-Flo and Sil-Fos silver brazing alloys in conjunction with Handy Flux with very good success.

The Easy-Flo is a low temperature brazing alloy containing 50 per cent silver and may be used to join dissimilar metals such as stainless steel to copper or brass, or ferrous to non-ferrous alloys. It has a 1160° F. melting point and is exceptionally fluid at 1175° F. which makes it easy to use.

Sil-Fos is used only on copper, brass and other non-ferrous alloys. It has a melting point of 1185° F. and is free flowing at 1800° F. If the hardware is one of the non-ferrous metals therefore I would suggest Sil-Fos. It contains only 15 per cent silver, hence is much cheaper to use.

Just a word about Handy Flux. This Flux was designed especially for use with these two brazing alloys. It begins to fuse at 800° F. and starts dissolving oxides immediately. At 1100° F. it is a thin, active fluid which dissolves all refractory oxides rapidly and thoroughly, including chrome oxide. It works very effectively with silver brazing alloys having flow points from 1175° F. to 1600° F.

Sil-Fos, Easy-Flo and Handy Flux are manufactured by Handy and Harmon and can be purchased in all leading cities or where welding equipment is sold.

## HELP! HELP!

NEW problems for the service engineer which in turn create new questions, answerable only from experience in the field arise every day. Readers are invited to submit questions on which they would like to have information as to what others are doing. Answers are solicited from readers and will be published in the "Service Pointers" department.

## FRIGIDAIRE BOTTLE COOLER

I ran into a Frigidaire bottle cooler recently, marked 18S442 F1BC. It was cold on only one side of the tank and I assumed that it was low on Freon. However, there are no service valves on this machine—the only valve on it is on the liquid line. This is a capillary tube outfit. How is one supposed to connect test gauges to such an outfit in order to find out what is going on?

I can put more gas into the system easy enough but how can it be kept there while disconnecting the charging line and putting the plug in the hole again? There is an opening in the compressor head, presumably for purging, which is closed with a pipe plug.—S.J.F.

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## WANTS TO REDUCE BUSINESS

FOR assistance in keeping business away from his door, P. L. Cerone, proprietor of Cerone's Service, Syracuse, N. Y., has applied to a Syracuse newspaper. Mr. Cerone reported he has refused to answer from 15 to 30 calls a day from owners of refrigerators that were out of order. He requested that information be given owners of refrigerators on how they can keep machines from breaking down, thus reducing the number of calls he receives daily for service. The newspaper carried the instructions.

# The Construction of Compressor Bodies

(CONTINUED FROM JUNE ISSUE)

**NOTE:** This is the fifth and final article on the Construction of Compressor Bodies designed to give service men a more complete understanding of compressor construction and how to dismantle and assemble them for repairs and adjustments. The compressors described in these articles are made by the Williams Oil-O-Matic Heating Corp., Bloomington, Ill. The construction details and principles, however, apply to other makes.—Editor.

## Compressor Body No. Y-263-B

Compressor body No. Y-263-B (Fig. 19) has a bore of 1-5/16-inch, a stroke of 1-5/16-inch, twin cylinder, and is used on Model T compressor units beginning May, 1935.

The general construction of the Model T compressor body in Fig. 19 is the same as

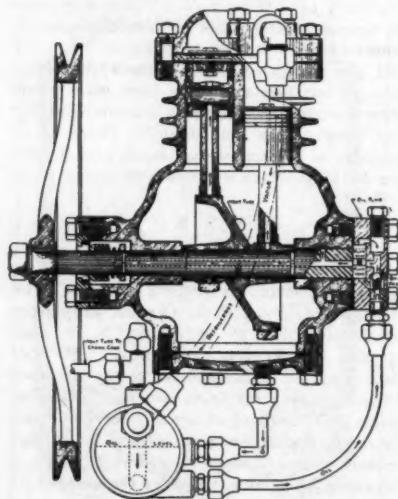


FIG. 19

that in Fig. 18 except for those changes required by incorporating the new force feed lubrication system. These changes seriously affect the eccentric, eccentric shaft, and eccentric straps and consequently these parts are not interchangeable.

### Pressure Lubrication System

By observing the sectional drawing in Fig. 19, it will be observed that the splash lubrication system has been replaced with a pressure system. An oil pump mounted at the end of the eccentric shaft and turned by that shaft, forces oil under pressure to all main, eccentric strap, and wrist pin bearings and also to the compressor seal. (See Fig. 20 for improved oil pump and oil circuit which also apply to this body.)

The oil drains by gravity out of the crankcase into an auxiliary oil receiver or sump mounted parallel with the refrigerant receiver. The oil pump draws the oil from this sump.

The eccentric casting is machined for a press fit at the ends and between these points, it is recessed to provide an oil reservoir. This recess extends entirely around the inside of the eccentric. There is, therefore, no alignment of oil holes required in assembly when the shaft is pressed into the eccentric. A hole drilled at right angle to the shaft through each eccentric proper to the recess just referred to, extends the pressure oil lines to the eccentric strap bearings.

Further extension of this oiling system to the wrist pins is provided by a hole drilled through each eccentric strap to the eccentric bearings.

### Oil Receiver or Sump

The horizontal oil receiver or sump is not only connected by an oil drain from the crankcase and a return to the pump, but also by a vent tube to the crankcase. This vent is installed to provide return of vapor to the crankcase, thereby permitting free passage of oil at all times through the drain from the crankcase to the oil sump.

In addition to these connections, a vapor tube is constructed through this oil sump and copper tube connections are so made

that the discharged refrigerant vapors from the compressor head are discharged through this tube in going to the condenser. Although these connections are located at the top of the oil receiver, this tube drops down on the inside so that the super-heat of the vapor warms the lubricating oil sufficiently to vaporize any refrigerant that the oil may contain.

Under ordinary operating conditions the oil will be free from methyl chloride but where a unit has been shut down for a considerable length of time, particularly in a low room temperature, the oil may become saturated with refrigerant. This condition may also develop through the improper functioning of the low side unit causing liquid refrigerant to be drawn back through the suction line. It is possible for this latter condition to be so extreme that the function of the oil receiver cannot rectify this condition rapidly enough and oil pumping occurs. Oil pumping is ordinarily evidenced by a severe knock in the compressor caused by the oil being forced through the discharge valves. Obviously, the cause previously referred to should be eliminated.

### Oil Pump

The oil pump is of an eccentric vane construction. The two vanes are held against the outside wall by a spring, this wall being set eccentric to the shaft. The porting is then arranged accordingly so that the vanes pick up the oil on one side and discharge it on the other. The further course of the oil through the pump housing can readily be determined from Fig. 19.

A plug in the pump housing can be removed (when the crankcase is pumped down to zero) so that a gauge may be installed for checking the pump pressure. This gauge reading, however, will indicate the pump pressure and not the oil pressure exerted against the bearings as the crankcase pressure will ordinarily be above atmospheric pressure. The actual oil pressure on the bearings will be the pump pressure less the crankcase pressure. This pressure should be between 15 and 25 lbs.

In case there is methyl chloride in the oil, it will tend to reduce the oil pressure due to the compressing of the vapors.

The pump pressure is controlled by an automatic by-pass in the pump body (Fig. 19). This by-pass can, when necessary, be adjusted with a screw driver by removing the inlet connection on the pump. Turning

the adjusting screw to the right or clockwise increases the pressure and counter-clockwise decreases the pressure. This by-pass will be properly adjusted before leaving the factory and ordinarily will not require adjustment in the field.

**Caution:** Absolutely under no circumstances should any adjustment be made when there is any indication of methyl chloride in the oil.

Only a limited number of units were produced with the pump and by-pass assembly described in the preceding paragraph. This construction was replaced with an internal gear pump and a separate by-pass. This series of units is readily identified by the elongated by-pass assembly screwed into the seal cavity. This by-pass is non-adjustable. A fitting is provided in the by-pass assembly for installing a gauge to check the pressure.

In order to obtain quieter operation on domestic models a further change has been incorporated on recent production eliminating the by-pass assembly on the seal cavity and by-passing the oil through the wrist pins and down through grooves in the piston skirt. A fitting still remains on the seal cavity for installing a gauge to check the oil pressure.

### Oil Supply

The proper oil level is indicated in Fig. 19. This oil charge requires approximately one and one-half pints.

If the suction line is closed and the crankcase pumped down to zero, the seal cap may be taken off of the top of the tee on the oil receiver. By then inserting a wire or small tool, the oil level can readily be determined. The oil level should be 8 inches from the top of the tee. With this dimension, a marked gauge can readily be made and kept in the tool kit for this purpose.

### Compressor Body No. Y-710

Compressor body No. Y-710 (Fig. 20) has a bore of 1 $\frac{5}{8}$ -inch, stroke of 1 $\frac{5}{8}$ -inch, twin cylinder, and is used on Model S compressor units from beginning.

The general construction of the S series compressor body is very similar to the Model T (Fig. 19). The pistons, straps, and eccentric are slipped into the crankcase as an assembly and the eccentric shaft is then pressed into the eccentric. The oil pump, cylinder head, seal, and crankcase plate can then be installed, completing the assembly of the body.

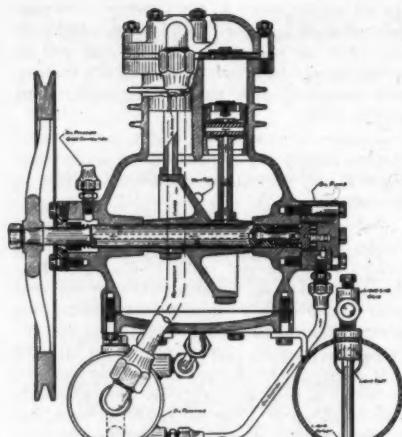


FIG. 20

The shaft is pressed into the cast iron eccentric in the assembly of the compressor and the press fit is such that no key is necessary. Furthermore, there is no alignment necessary between the oil hole in the shaft and the eccentric due to the eccentric being cored larger in the center than at the ends, thereby providing passage of oil from the holes in the shaft to the holes in the eccentric regardless of the relative position of the two.

#### Cylinder Head and Piston Valves

The discharge valves of the cylinder head and suction valves in the pistons in this compressor body are of the same general design and construction as illustrated in Figs. 10 and 11, respectively.

#### Lubrication System

This compressor body is constructed for pressure lubrication of a unique design which incorporates an oil rectifier in which the oil supply is carried. The oil is forced through the compressor bearings by means of a pump driven from the eccentric shaft.

This pump draws the oil from the oil rectifier and forces it through the eccentric shaft and eccentric to the main and connecting rod bearings, the seal cavity and also through the eccentric straps and wrist pins to the cylinder walls where it is by-passed around the piston skirt and back into the crankcase. This oil, however, does not remain in the crankcase but drains by gravity

to the oil rectifier. This provides a so-called "dry crankcase" which is a distinct advantage in preventing oil pumping complications.

The compressed refrigerant vapor instead of going direct to the condenser, passes through a tube extending through the oil rectifier lengthwise under the oil level. The heat of compression in this vapor warms the lubricating oil so as to provide better lubrication and drive out of the oil, such refrigerant as might be saturated in the oil.

The oil pump used is a rotary, internal gear type and is designed to operate only in one direction of rotation. Should the direction of compressor rotation be changed such as through the substitution of a gasoline motor for electric, a pump of corresponding rotation must be installed.

The pressure exerted by the pump less the crankcase pressure indicates the oil pressure on the bearings. This oil pressure should be between 15 and 25 lbs. There is no adjustment, however, for regulating this pressure. If the pressure is found to be much lower than this, pump the crankcase down into a vacuum as it may be through some abnormal condition, the oil contains considerable refrigerant vapor.

If the oil pressure is found to be excessively high, it will probably be at the beginning of the running period with the compressor in a cool location, which condition will clear up after the oil becomes warm.

#### Oil Supply

The oil supply can be checked by pumping down crankcase, and removing plug in top of oil rectifier. The proper charge of oil for this compressor is four pints.

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#### MARINE REFRIGERATION IN WAR EFFORT

MARINE refrigeration is playing a vital role in the war effort, not only by making possible the transportation of large quantities of perishable foodstuffs over long distances, but also in providing better food on warships and merchant vessels, R. L. Tomlinson, of Carrier Corp., declared in connection with the celebration of National Maritime Day. Larger quantities of ship refrigeration have been and are being installed in the present war than were even dreamed of during World War I. The result, he stated, can be seen in the quality of fresh food available to American troops overseas.

# Questions and Answers on Changes Effectuated by Order L-38

A NUMBER of changes of considerable significance to the refrigeration industry are included in the amended Order L-88, covering industrial and commercial refrigerating and air conditioning machinery and equipment, issued May 20 and 28 by the War Production Board.

The following questions and answers released by the General Industrial Equipment Division gives the chief changes effected by the amended order.

## What System Includes

**Question:** Does the term "system" include the following: (a) all types of evaporative coolers; (b) Water coolers of the cooperage type; (c) Cooling towers of the atmospheric, forced draft and washer type

**Answer:** The word "system" is used to cover both refrigerating and air conditioning systems.

(a) It includes such equipment as evaporative coolers designed for air conditioning purposes. There are a number of types of apparatus used merely for the transfer of heat from one substance to another, however, which are not included by the definition. These usually consist of pipe, tubing, or other apparatus used as a conduit for the passage of the substance to be cooled, in the course of which heat is exchanged or transferred from such substance, directly into the atmosphere or into water which is not artificially cooled, and without the use of any other cooling or refrigerating equipment or machinery. Among the types of apparatus sometimes used in this manner, and which are not within the definition of "system" when so used, are the following: Oil quenching equipment, shell and tube coolers, transformer oil coolers, generator cooling coils, and radio tube coolers. The pipe or tubing previously referred to may be subjected to a water spray or exposed to water not artificially cooled, which aids in the dissipation of the heat, but this does not bring the apparatus within the definition. For example, some of these types of apparatus used on boats

are designed to pass ocean or river water through the coolers for such purposes as cooling engine oil, and such apparatus is not within the definition.

(b) Containers of the so-called "cooperative type" such as "railroad water kegs," "harvest kegs," and "water breakers" for use in life boats and life rafts, which are not used or designed for use with coils or other apparatus intended for the application of ice or refrigerants in lowering the temperature, are not within the definition of the order.

(c) Equipment such as cooling towers of the atmospheric, forced draft or washer type are included under Order L-88 only when such equipment is a part of a "system" as defined in paragraph (a) (1) of the Order.

## How to Obtain Ratings

**Question:** How must the ratings be obtained for deliveries for maintenance and repair service?

**Answer:** Prior to the amendment of L-88 on May 20, 1943, repair parts could be delivered to the owner (consumer) of a system only for "emergency repair service" as then defined in the Order, (in addition to the deliveries of repair parts permitted under "authorized orders" or for direct use by the Army and other agencies designated in (b) (1) (i) (d)). Parts may now be delivered for "maintenance and repair service" as now defined, provided deliveries are made under an Order rated AA-5 or higher. It is immaterial whether the rating is assigned under Order P-126, under CMP Reg. 5, on a PD-1A Certificate, or in any other way. Regardless of how the rating is obtained, however, deliveries can be made only in accordance with L-88. It is to be particularly noted that equipment which would constitute a capital addition cannot be delivered for "maintenance and repair service" even though CMP Reg. 5 permits the use of the ratings assigned by it for capital additions of a limited amount. Even though ratings for such capital additions may be assigned under CMP Reg. 5 or otherwise, it is still

necessary to secure an "authorized order" for their delivery to be permissible under Order L-38.

### When Delivery Is Made

**Question:** Is a delivery to be considered as made "to and for direct use by the Army, etc. . ." or other designated agency when the equipment is to be used by a private contractor? If it is to be purchased from company or squadron funds?

**ANSWER:** Several provisions of the Order restrict deliveries, with an exception provided for cases where the equipment is "to be delivered to, and for direct use by" the Army or other designated agencies. Such an exception applies only where the Army or other agency purchases the equipment, and for direct use by its own regular personnel or regular employees. Not excepted are deliveries made to persons other than the designated agencies, even though the equipment is to be purchased from company or squadron funds, or the like. These are not purchases by the "Army." Neither are deliveries made to such an agency excepted where the equipment is for use by its contractors, or by persons who are not regular personnel or regular employees of the agency. For example, the delivery of a walk-in cooler to be used by a university which is furnishing classroom facilities for training "WAVES" and having university employees serve meals, would not be excepted.

### Status of Repair Parts

**Question:** Paragraph (b) (2) (i) of the Order states in effect that "dealer, producer, or other person may deliver (unrestricted by this Order)—, any new or used parts acquired by such dealer, producer, or other person prior to May 15, 1942, for use in any such equipment owned by him on May 15, 1942, except—." Does this paragraph apply to parts other than repair parts and may repair parts owned on or before May 15, 1942, be sold for use in equipment owned before May 15, 1942?

**ANSWER:** The term "parts" as used in subparagraph (b) (2) (i) refers only to parts (whether new or used) necessary for the installation of List A equipment such as tubing, controls, etc. It does not include new or used parts to be used for replacement purposes. All repair parts, whether for List A items or any other "system," are subject to the restrictions in paragraph (b) (1).

### Farm Milk Coolers

**Question:** With regard to subparagraph (b) (2) (iv), can farm milk coolers be delivered, unrestricted, less coil and condensing unit?

**ANSWER:** The delivery of such farm milk coolers is not restricted by Order L-38, but is subject to the provisions of Limitation Order L-170 and the rationing procedure established by the Department of Agriculture. The coil and condensing unit may only be delivered on an "authorized order" (PD-81) to the manufacturer (assembler) of the milk cooler, unless delivered for maintenance and repair service. When assembled, the complete unit is then subject to Order L-170 (or any other order dealing with farm machinery) and the rationing procedure, and not to Order L-38.

### Delivery to Agency

**Question:** Subparagraph (b) (2) (iii) of L-38 does not mention that an authorized order is required to make delivery to the designated agency. Can these items be delivered without a rating or authorized order?

**ANSWER:** This subparagraph refers to items of equipment on List B, Part II, and if for delivery to and for the direct use of the designated agency, they may be delivered to such agency without an authorization or rating. Any rating applied by such agency will usually be on a PD-8A Certificate, although not required by L-38.

### Dispensing as Retailing

**Question:** Does "dispensing" as used in item 16, List C of L-38, include retailing in a food market?

**ANSWER:** Yes.

### Construction Work

**Question:** What is meant by construction work as defined in subparagraph (c) (1) (iii) of L-38?

**ANSWER:** Refer to the definition as given in Conservation Order L-41. Paragraph (b) (2) of Order L-41 contains certain exceptions to its restriction on new construction. For example, (b) (2) (ix) exempts structures which will not require any specific authorization for material to provide electric or other designated services, under any Order in the "U" series, provided that the estimated cost of the construction is less than the amount specified for particular types of construction. By reference to

paragraph (h) of Utilities Order U-1, it is found that paragraphs (h) (1) (ii) and (iii) permit additions or expansions of a limited nature to electric and certain other utility plants, without a specific authorization from the War Production Board. If a proposed installation of a refrigerating or air conditioning system may be made, under these provisions, without a specific authorization, and if the cost of the proposed construction does not equal the amounts specified in L-41 (for example, if the proposed construction is industrial construction as defined in L-41, and the estimated cost will be less than \$5000 over the period specified in L-41), no authorization under L-41 is required. An authorization under L-88 would be required in such case. Should the proposed construction not be exempted under the terms of L-41, however, then separate authorizations under both L-41 and L-88 are necessary, in addition to any authorization which the utility requires under U-1.

#### Rating for Shop Repairs

**Question:** Do manufacturers require AA-5 or better rating to repair a compressor or unit in their own service department taking into consideration that some new parts would naturally be required?

**Answer:** No. The amended Order L-88 permits the exchange of a used sub-assembly of a type which is normally exchanged in assembled form in order to permit immediate restoration of the installed system to service and subsequent shop reconditioning of such sub-assembly. Therefore, if such a sub-assembly was returned to the manufacturer, he would not require a rating in order to repair it. However, such a repaired sub-assembly cannot be delivered to a person acquiring the same for use except under an order rated AA-5 or higher.

#### Hermetic Condensing Units

**Question:** Is it permissible under Order L-88, subparagraph (b) (2) (i), to deliver, without restriction, hermetic condensing units of a capacity greater than  $\frac{1}{3}$  h.p.? The last sentence of this paragraph reads, "except a new refrigeration condensing unit rated at more than  $\frac{1}{3}$  h.p. and designed for remote installation."

**Answer:** Condensing units of either the hermetic or open type larger than  $\frac{1}{3}$  h.p. may be delivered, unrestricted, with and for use in List A items if such items are self-contained; that is, the condensing unit is in-

corporated within the enclosure of the List A item. If not self-contained, units over  $\frac{1}{3}$  h.p. whether of the hermetic or open type, may only be delivered pursuant to an "authorized order."

#### Contacting the W.P.B.

**Question:** Should the War Production Board be communicated with in regard to applications for refrigerating and air conditioning equipment filed on Forms PD-880 and PD-881?

**Answer:** Yes, but allow enough time for the original application to reach the General Industrial Equipment Division and an additional ten days for the application to be processed.

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#### RATING ON GAS CYLINDERS

**INTERPRETATION** No. 1 of General Preference Order M-283, issued June 25 by the War Production Board, points out that a preference rating for maintenance, repair and operating supplies may not be used to obtain a gas cylinder from manufacturers. This applies whether the user carries his gas cylinders as operating supplies or as capital equipment.

Under M-283, WPB controls the manufacture and distribution of gas cylinders. No gas cylinders or gas cylinder forgings may be manufactured or delivered except as specifically directed by WPB on Form PD-662.

A user desiring to purchase gas cylinders is required to obtain a preference rating assigned specifically for this purpose, on WPB Forms 541 or 542 (formerly forms PD 1-A or PD 3-A). These forms should be filed with the Containers Division, WPB, Washington, D. C. Ref: M-283.

Many users of gas cylinders operating under Preference Rating Order P-98-b have erroneously interpreted that order as giving them the right to apply to the purchase of gas cylinders a rating of AA-1 assigned in that order for maintenance, repair and operating supplies. A provision of that order specifically excludes containers.

Likewise, users have misinterpreted CMP Regulation 5 as giving them the right to apply the maintenance, repair and operating supplies ratings assigned by that regulation for the purchase of gas cylinders. Item 1 of List A of that Regulation specifically excludes containers.

# QUESTIONS AND ANSWERS

On Interpretations and Rulings on Government Orders Covering  
Refrigeration Sales and Service Bulletins

BECAUSE of the interest in Government war regulations pertaining to the refrigeration service business, THE REFRIGERATION SERVICE ENGINEER answers below a number of individual questions on the application and interpretation of the above regulations. The answers to these questions have been checked carefully for accuracy. However, since government regulations are subject to constant changes and modifications, we cannot guarantee the correctness of answers beyond the date of the issue in which they appear. Readers are invited to submit questions pertaining to their individual problems.

## SERVICING BEVERAGE COOLERS

QUESTION 29: Under P-126 can beer and other beverage coolers be serviced and parts bought for the same? One man connected with the WPB told me not when I talked to him. I also have information to the contrary but not from a source of much authority. I'd like to get the low-down on it for once.

ANSWER: Under Order P-126, an emergency service agency can extend a preference rating of AA-4 to secure material for emergency repair service to beer and other beverage coolers. Refer to Class III in section (b) of Order P-126. The answer to the next question also indicates another source of preference ratings for work of this type.

## PERMIT TO USE MRO

QUESTION 30: Does one need a permit or certificate to use this MRO which I understand supersedes P-100?

ANSWER: The MRO procedure refers to CMP Regulation 5 and no permit or certificate is required to make use of the special preference ratings or the general rating of AA-5 which this regulation extends for "necessary maintenance or repair of facilities required for producing any product or conducting any business . . . or for necessary operating supplies for any such purpose."

The regulation requires that the customer place a certification on his purchase order which automatically entitles him to the preference rating. The following instruction in this regard is quoted from CMP Regulation 5.

"(2) A preference rating assigned under

this paragraph (d) shall be applied only by use of the following certification (or the alternative form of certification provided in CMP Regulation No. 7), signed manually or as provided in Priorities Regulation No. 7:

"Preference rating—(specify rating)—MRO. The undersigned certifies, subject to the criminal penalties for misrepresentation contained in section 35 (A) of the United States Criminal Code, that the items covered by this order are required for essential maintenance repair or operating supplies; that this order is rated and placed in compliance with CMP Regulation No. 5; and that the delivery requested will not result in a violation of the quantity restrictions contained in paragraph (f) of said regulation."

Perhaps in explanation we should point out that this regulation is designed to cut out "red tape" and allow all businesses to secure needed maintenance and repair parts without securing a special extension of preference ratings for each job. Thus each business can certify its own rating for MRO (Maintenance, Repair, Operating) supplies.

In the certification above there is a blank indicated for stating the rating. While the general rating for MRO supplies is AA-5, certain specified manufacturers and others are listed in the regulation for preference ratings of AA-1 or AA-2. It would be well for every refrigeration service agency to secure a copy of CMP Regulation 5 and study it to determine if any customers are included in the list of those entitled to higher ratings.

Some further information on the *minor capital additions* provision of the regulation is given on page 28 of this issue. It should be kept in mind that the E, L and M orders will control wherever CMP. Reg. 5 appears to conflict with them.

#### REPAIRING ELECTRICAL APPARATUS

**QUESTION 31:** Does the repairing of a motor and other electrical apparatus including wiring, which is a component part of a refrigerating machine, come under Order P-126?

**ANSWER:** Yes, Order P-126 covers all component parts of the refrigerating machine or system.

#### REPAIR PART FOR COMPRESSOR

**QUESTION 32:** I've been waiting just two weeks for a repair part for a compressor in a meat market. This is the only refrigeration this man has in his market, but the supplier says AA-4 under P-126 is the highest rating applying to this, which I gave for the part which is a factory order. This is the only meat market in that town.

**ANSWER:** At the war conference of the industry this spring the manufacturers emphasized that they were doing what they could to speed delivery of orders and repair of parts or equipment sent to them but under present war conditions it is difficult to accomplish prompt handling. To save as much time as possible you are urged to make up orders carefully so that they are correct and completely understandable. The Society also is doing everything possible to increase supplies of needed parts and speed them into the channels of use.

Since the breakdown of this particular equipment jeopardizes perishable food supplies in your city, the War Production Board might consider it worthy of handling under the general emergency repair service provisions at a higher rating. The meat market owner should phone, wire, or write the nearest district office of WPB stating: (1) why the need is urgent from the standpoint of public health and welfare; (2) what rating is required for quick delivery of the needed parts; (3) the name of supplier and price of the parts.

In your case the matter would be handled by the market owner with the District Office of WPB in Sioux Falls, S. Dak. Since he is the only source of supply for meat in the area they might extend a rating high enough to secure the parts very quickly.

#### RESTRICTIONS ON STEEL EASED

**R**ESTRICTIONS on the use of steel in specifically named parts of certain sizes of refrigerating equipment have been eased by Amendment No. 1 to Limitation Order L-126 as amended March 27, effective June 17, 1943.

The changes brought about by the amendment are confined to Schedule II of the order. The most important provisions are:

Permit manufacture of water cooled condensing units of two horsepower or less designed to operate at a refrigerant suction temperature below minus 40 degrees Fahrenheit.

Permit the manufacture of three horsepower air-cooled condensing units, three horsepower water- and air-cooled models and special models operating below 25 degrees Fahrenheit.

Permit the use of carbon steel for condensing unit bases to the extent of 30 pounds per horsepower and an unlimited amount of cast iron.

Remove restrictions on use of steel for fan shrouds.

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#### CEILING PRICES ON REBUILT PARTS FOR COMMERCIAL UNITS

**A**CEILING of 75 per cent of the present list prices for new parts or subassemblies was established June 25 by the Office of Price Administration for reconditioned or rebuilt parts of subassemblies for commercial refrigeration equipment when sold by reconditioners.

This action covers only rebuilt or reconditioned subassemblies and parts which were not sold by the manufacturer during March, 1942. Many manufacturers, OPA pointed out, will be compelled to recondition and rebuild certain part and subassemblies for their own refrigeration equipment because of the tightness in supply of new parts and subassemblies—production of which has been drastically curtailed under War Production Board Limitation orders.

The new ceilings will be under the provisions of the General Maximum Price Regulation. A survey of sales made by OPA of reconditioned parts and subassemblies of several of the large refrigeration equipment manufacturers who during March, 1942, reconditioned and rebuilt parts of their equipment showed that about 85 per cent were sold on the basis of 75 per cent

or lower of the list price of an equivalent new part or assembly.

Reconditioned parts or subassemblies sold by manufacturers during March, 1942, have been and remain under the provisions of the General Maximum Price Regulation at the highest price charged during that month by each manufacturer.

The action was contained in Order No. 555 under the General Maximum Price Regulation, effective June 25, 1942. The order provides that the maximum prices are subject to the same discounts and the same rendition of services which the manufacturer extended on sales of equivalent new parts or subassemblies to the same class of purchaser on March 1, 1942. The measure also defines a reconditioned or rebuilt part and specifies that the ceilings may be charged only if the reconditioned equipment is guaranteed to perform 90 days of satisfactory operation.

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### MORE FREON AVAILABLE

OPERATORS of essential refrigerating and air conditioning systems will find chlorinated hydrocarbon refrigerants (Freon) more available in July than in June, according to an announcement made June 28 by the War Production Board.

The amount which may be allotted to the restricted list of essential users under General Preference Order M-28 is only 22 per cent less than the amount distributed to all users of the refrigerant in July, 1942.

The prohibition of the use of chlorinated hydrocarbon refrigerants for comfort cooling systems continues in effect.

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### CONSERVATION OF FREON

THE shortage of Freon refrigerant for air-conditioning purposes makes it imperative that theaters, office buildings, hotels, restaurants, and other service institutions equipped with "comfort cooling systems" not classed as essential users take immediate steps to conserve their present supply of the refrigerant, the Service Equipment Division of the War Production Board advised July 5.

A recent amendment to Order M-28 (Chlorinated Hydrocarbon Refrigerants) barred the delivery of Freon refrigerant to any comfort cooling system after June 5. The action was taken to conserve the chem-

ical for essential war industries and for preservation of perishable foods.

This does not mean imminent shut-down of currently operating cooling systems, Division officials pointed out. With proper care and maintenance of existing equipment, the refrigerant can be used for several years without deterioration.

However, to assure continued operation of the equipment, a complete check and necessary repairs should be made without further delay as a precaution against leakage or loss of the refrigerant, officials emphasized. Once present charges of the refrigerant are lost, there will be no possibility of replacing them under present restrictions, it was pointed out. This in effect will force abandonment of the air-conditioning system until Freon is once more available.

Where emergency repairs are necessary, repair and maintenance parts may be obtained through ratings assigned under Controlled Materials Plan Regulation No. 5.

The ban on refrigerants applies only to Freon and does not affect deliveries of carbon dioxide or any other type of refrigerant used in comfort cooling systems.

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### RESTRICTIONS ON PARTS EASED

QUICK relief for service men may be expected in the bottlenecks which now exist in the flow of a number of items in the list of refrigeration parts and materials.

This was promised to Acting Secretary J. W. Power, of the Refrigeration Service Engineers Society, by Sterling F. Smith, Chief, Refrigeration and Air Conditioning Section, General Industrial Equipment Division, War Production Board, at a conference in the Edgewater Beach Hotel, on the occasion of Mr. Smith's visit to Chicago on June 24.

Over breakfast coffee Mr. Smith displayed optimism in speaking of parts and materials.

"The Freon situation will improve in July and will pass the critical stage in August," he said, "On such items as controls, fractional horse power motors, thermostat bellows, seals, and copper tubing, proper remedy is on the way. We must not lose sight of the fact that we are still at war, and until victory is won nobody can expect normal conditions to surround parts and materials, but the situation seems much better, and we hope, by breaking these bottlenecks, to improve things still more for service men."

# Keeping Workers from Getting Hurt

Job accidents in the United States from July 1940 to January 1948, the 30 months covering the defense program and the first year of war, brought death to 48,500 workers, cost 258,000 an eye, finger, hand, arm or leg, and laid up 5,800,000 for an average of three weeks each. Days of work lost in these accidents totalled 110,000,000—more than 375,000 man-years.

In the first eighteen months of the war, our announced battle casualties have numbered 12,123 dead, 15,049 wounded, 40,435 missing and 10,628 prisoners of war, a total of 78,285.

Most job accidents can be prevented, and valuable production for war can be saved, by careful supervision by management, safe work habits by workers and fullest use of safety devices. A series of short do's and don't's has been prepared by the U. S. Department of Labor on how to safeguard workers and to promote production, the first of which is presented here.

A PRESS release issued by the Office of War Information points out that the skill and strength of the industrial workers of America must be guarded against accidents and diseases so as to carry through the war production program. With this end in view Secretary of Labor Perkins' Committee to Conserve Manpower in War Industries has compiled a list of do's and don't's to keep workers from getting hurt. This is the first of a series of articles prepared by the United States Department of Labor so that all workers can check the hazards applying to their own jobs and safeguard life and limb in their own interest and that of war production. The following rules have been compiled:

## Safety Rules Offered

1—Work in the shop only when you are physically fit and provided with the proper equipment, tools, and safety devices. Tell your foreman if anything is wrong.

2—Report all unguarded machines or unsafe or insanitary conditions to your foreman or safety committeeman at once.

3—Small cuts or scratches may become infected. Get first aid at once. Report all injuries promptly.

4—Walk—do not run—up and down stairs. Watch your step and keep your hand on the rail. Keep to the right in passing others who are approaching from the opposite direction.

5—Scuffling, horseplay, and practical jokes are dangerous and childish—act your age.



6—Do not use an air hose for dusting clothes or hair. Do not fool with compressed air or blow it at anyone else.

7—Never attempt to enter or leave an elevator while it is in motion, or to operate one unless specifically authorized and instructed how to do so.

8—Do not distract the attention of persons engaged in exacting operations.

# COMMERCIAL

INCREASE BUSINESS BY  
DOING A MORE EFFEC-  
TIVE JOB OF SELLING

## *Selling*

## Advertising Makes Sales Today and Builds Business for Future

*By James Carver*

RECOGNIZING advertising as a potent force in building and maintaining a successful service business, W. C. Irving, proprietor of Bill Irving's Refrigerator Service, Santa Monica, Calif., has put this idea into practical effect by distributing

booklets and by newspaper advertising. Reproduced below is a picture of Bill and his force and the three service trucks in front of his store. Incidentally, during the present emergency, half the store has been donated to the local ration board.



Front of store and office and service force of Bill Irving's Refrigerator Service. Left to right: F. C. Kirkham, serviceman; Martha Harvey, servicewoman; Bill Irving, proprietor; A. Held, serviceman; Mrs. Bill Irving, bookkeeper; Ray Farris, serviceman.

Recently 20,000 copies of "Wartime Suggestions," a 36-page booklet distributed by the Frigidaire Division of General Motors Corp., were placed on doorsteps of Santa Monica housewives. This booklet, designed to help housewives get the most out of their refrigerators, tells how to store and keep food properly under today's conditions, how to care for the refrigerator, and a number of tested recipes. All of which makes a definite contribution to the war effort through more efficient preservation of food.

Another distribution was 10,000 copies of "Your America," also produced by the Frigidaire Division of General Motors Corp., to the schools of Santa Monica. This booklet of 28 pages, built on the patriotic motif, gives important facts and information about America—its history, progress and way of life. Having no direct connection with refrigeration, this booklet nevertheless makes a good companion piece for the one in which the advertising message is more direct.

#### Adv. in Newspaper

Another view of Bill and his force, a closeup which includes Tommy, junior member of the Irving family, is used in a recent three column advertisement in the *Santa Monica Evening Outlook*.

Incidentally, in addition to running his service and sales business, Bill is president of the Los Angeles Chapter No. 1, Refrigeration Service Engineers Society, one of the live chapters of the National organization.

This is the time and this is the kind of advertising for the times of today, he says, having an eye to present business, and also building for the future. This was the first service agency in this part of the country to have a servicewoman. Miss Martha Harvey, second from left in the picture reproduced below, has been on regular duty since last October and she has made a definite place for herself in the organization. Housewives especially find her assistance and suggestions on how to get the most out of their refrigerators quite helpful.

## Electric Shop Stocks Ice Refrigerators

THE Still Electric Shop, Burbank, Calif., has taken on a line of Coolers. Said the manager, "These ice refrigerators have proven excellent sellers, as in this climate refrigeration is necessary all year.

"There has been more moving around the past year than ever before and in all cities like Burbank, with its big defense industries, a large influx of new people. We have found that the quickest and most effective method of reaching these people is through the Hostess Service—a co-operative plan participated in by leading merchants in non-competitive lines. It is in the hands of a man and his wife. A fine book has been gotten out giving a brief history of our community, pointing out the location of its schools, churches, public buildings, public utility offices, etc. The hostess, a woman of much natural charm, takes this book to each new family that arrives in town, and personally welcomes them. The book contains a note from each merchant, with coupon attached, offering a worthwhile gift to the newcomer if he comes in to get acquainted.

"We pay 10 cents a name for all such families, with other information given on the monthly report sheet. To date we have received an average of 150 names a month, of which about 100 have come in with the coupon. We have a follow up letter, telling the newcomer that we are glad to have had the opportunity of being among the first to welcome him, and congratulating him upon choosing this community as a home. We impress upon all of our sales force that they must back up our advertising with real friendliness to these people when they come in. We emphasize the fact that it is this personal interest that turns the looker and prospect into a regular customer."

\*\*\*

Charles L. Rusten,  
San Francisco, Calif.

Enclosed please find two dollars for which please send me THE REFRIGERATION SERVICE ENGINEER, the best magazine of its kind for any money.

It's Time to Tell About Refrigeration's "Hidden Services"



.. *take*  
Life-Saving  
**BLOOD**  
**PLASMA**,  
*for instance..*

A leading physician of the American Medical Association, said recently, "Our vast program for procurement and distribution of Blood Plasma as a life saving measure of our armed forces is dependent on REFRIGERATION. Iminated Blood would deteriorate and be-

program for procurement and distribution of Blood Plasma as a life saving measure for our armed forces is dependent on RE-

SEARCHED

Donated Blood would deteriorate and become useless, were it not for Cold Storage Cabinets at Blood Donor Centers, Refrigerated Shipping Containers which carry it—within 24 hours—to processing laboratories. Then Refrigerated Blood Coolers, Blood Banks, Plasma Storage cabinets protect the life-giving Plasma until processed for emergency use, at Army and Naval Hospitals, on shipboard and at Army field medical units overseas.

In this "Hidden" service of modern Refrigeration, as in all other phases, A-P REFRIGERANT VALVES provide steady, accurate and DEPENDABLE control . . . To help protect the life and health of thousands, at a time when mechanical breakdowns or inefficiencies could be disastrous.

Because of this A-P record for DEPENDABILITY in Controls, leading engineers and designers of Refrigeration and Air Conditioning Equipment—for postwar markets—are already sending intricate new-control problems to A-P. We invite your inquiry, and assure you designing and engineering assistance that you can use to profit.



**AUTOMATIC PRODUCTS COMPANY**  
244 NORTH THIRTY-SECOND STREET  
MILWAUKEE 10, WISCONSIN  
Export Dept. 100, 100 Varick St., New York City

# New Exchange Service Helps Solve Supplies Problem

By Robert Latimer

**R**EFRIGERATION service organizations in both commercial and domestic fields are benefiting solidly in the matter of obtaining used parts and equipment with the formation of a novel "Service Exchange," cooperative supplies plan developed by the Wisconsin Radio, Refrigeration & Appliance Association in Milwaukee, Wisconsin.

Under this plan the newly-chartered exchange service has acquired some forty members, including a number of appliance dealers gone into service work, with commercial and domestic service firms. All of these have experienced substantial difficulty in obtaining enough parts to handle all work piled up on them. One up-to-the-minute dealer, however, discovered that he was able to finish up a meat-packing refrigeration installation when he browsed around the stockrooms and storerooms of several other firms and found the necessary parts. Now, a system has been set up whereby every member of the group keeps a central office posted on the parts and used refrigeration equipment which he is willing to part with; thus forming a "pool" into which any member may dip when possible.

All members benefiting by the plan are pledged to take the time required for making up an accurate report and sending this in to be listed as part of a bulletin which goes out to all other members. Thus, when a refrigeration service job on a large installation falls down because a few parts are unavailable, a quick check of the bulletin may reveal that another firm has them and a telephone call will make up the deficit. The bulletin is made up by H. L. Ashworth, secretary-manager of the Wisconsin association, and is as helpful as possible to everyone concerned.

Undoubtedly the most important thing about the plan, according to Mr. Ashworth, is the fact that it is getting a lot of forgotten equipment and parts rusting away in some shed or storeroom out to go to work. Many hundreds of parts which are serviceable with a little repair work and cleaning up are being unearthed; even complete refrigerating compressors, pumps, valves, controls, etc., which the current owner thought unusable. One service company discovered that a pile of scrap iron had a number of worthwhile parts which were sold the day they were discovered. Any member has the privilege of buying at a group cost anything which another lists.

## War Significance Counts

There is also a war significance to the plan which counts heavily. When a dairy refrigeration system broke down recently, endangering milk supplies for Army and Navy centers nearby, the association quickly got together enough parts and equipment to patch it up in a few hours—something which could not have been accomplished by any other method. Also, good will for refrigeration engineering is being built up through the fact that when one firm cannot handle a proposed job, it can scan the bulletin and offer the name of another who can. Competition has been replaced by a spirit of friendly cooperation, Mr. Ashworth explained.

The idea has been so well accepted that out-state refrigeration service organizations have written in to buy some of the used merchandise listed, according to the association. However, it is being kept to a circle of Wisconsin firms so far as the exchange is concerned.

# THAWZONE

*The Pioneer Liquid Dehydrant*



## HEARTILY ACCLAIMED

*by Service Engineers Everywhere!*

In these days of man-power shortage and the necessity for finishing more service jobs per day, THAWZONE has become more in demand than ever before. Here's why and how:

Many jobs are moisture cases that begin to kick-up before there's much moisture in them. Put in THAWZONE and go on to the next job. Nine out of ten of these jobs will be finished with the ONE call. If, occasionally, another "shot" is necessary to take care of unusual moisture, give it. This will be the exception, however.

The action of THAWZONE is permanent, because it destroys moisture and neutralizes acid by chemical action. If you are not fully aware of what THAWZONE means to you in time and energy saved, we suggest that you contact your jobber at the first opportunity. He has a descriptive folder for you. If not, write us.



**HIGHSIDE CHEMICALS CO.**  
195 Verona Ave., Newark, N. J.

# The Question Box

Readers are invited to send their problems pertaining to the servicing of household refrigerators and small commercial refrigerating equipment to "The Question Box."

## ZENITH REFRIGERATOR

QUESTION 552: I am in need of some advice and hope that you can help me. I was called recently to service a Zenith refrigerator. I have never heard of the box before, and so far, have not found anybody else that has either. The restaurant proprietor bought the restaurant recently and the box that was in it, but he had no knowledge as to where it was purchased. The box is not over 1½ to 2 years old. It has a card with it stating that it is a Scotch Yolk Reciprocating compressor using 9 oz. Freon as charge. I would gather from that information that it is a General Electric compressor, but do not know for sure. The box kept cold enough, but would not freeze ice cubes, and frosted down one side of the evaporator and half way across the bottom. The motor runs all the time. The control for the refrigerant is about 6 ft. of capillary tubing. The compressor has no service valves on it, but has two capped openings where you can put gauges on by stopping the motor and being quick about removing caps and installing gauges. I found no leaks, but the head pressure was about 90 lbs.

I tried charging the unit, but this did not do it any good. I then discharged the machine, disconnected the discharge line, plugged the line with 5/16 plug, started the machine and evacuated it. The system pulled down to 26 inches of vacuum and held it all right, which seems to me was good enough for the box to work O.K. I charged the machine again, and it was just the same as before. I am rather puzzled by this and cannot see what is wrong.

The unit has a small Silica-Gel dryer in line just ahead of the capillary. Do you think this could be partially stopped up? The line is not any cooler on the outlet end of the drier than it is on the inlet end.

I have another problem also. I do work for the local dairy on cases and cabinets. They have low pressure refrigerants only. They called me the other day to see if I could help them out with their ammonia outfit on the cooler and brine tank. They have

an oil filter in the discharge line ahead of the condenser, but the engineer in charge had not drained the oil as it should have been done, so the oil worked out and on into the system. The receiver sight glass that shows the amount of the liquid shows that the ammonia is black colored as if it is thoroughly mixed with oil, and they are circulating together. The outfit worked all right for a while, but recently, the brine tank will not pull down hardly at all. The cooling coil in the brine tank is oil logged from all appearances. They have tried warming the brine up and then flooding the coil through, but have not had much success. Somebody also told them to tap into the liquid line at the header of the float valve, and then warm the brine up. By stopping the machine and raising the back pressure to blow the oil out a purge line could be attached to tapped opening. They did this also and got out a gallon or so, but not enough to do much good.

The brine tank is about 12 ft. long, 6 ft. high and 4 ft. wide. The manager wanted to know if I thought it would be a good idea to drain the brine, cut a hole in the bottom of the tank, tap into the coil and put a drain on it, or if it would be better to blow off the full charge of the refrigerant and recharge it with all new gas, or both. I told him that blowing off gas, in my opinion, would not do much good, as the inside of the pipe coil would be coated with oil, and he would have to clean them out somehow. The oil drain would probably be O.K., but I do not know just how the coil is made, as it is completely covered. I do not know positively if it would drain out. The milk cooler and ice-cream cooler both work all right—36° above and 30° below respectively.

Do you think the oil separator would take all the oil out eventually? It is a home-made one of welded construction, and while it does take oil out, it does not seem to do it very fast. They can trap now about a gallon or two of foam a day, which is not much, after it settles down. How about another separator, or a bigger one?

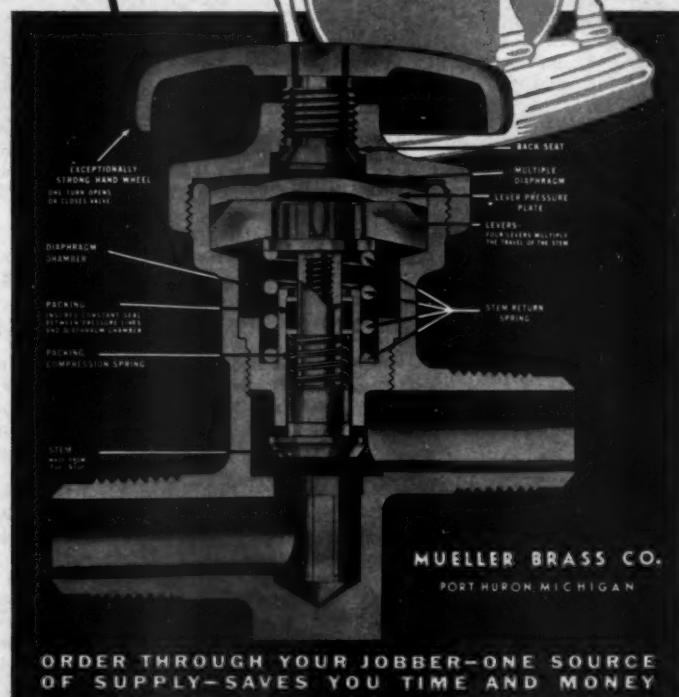
Thank you for any help you can give me.

# Increased DIAPHRAGM LIFE PROLONGS THE SERVICE LIFE OF THE VALVE

Because of the small amount of movement, the multiple diaphragm in our Triple Seal Valve is never deflected past its normal center, thus immeasurably prolonging both its life and the life of the valve in service.

This valve has positive sealing at three essential points—a back seat with valve in open position—the multiple diaphragms—and the superior packing around the stem. This packing assures constant seal between pressure lines and diaphragm chambers.

One turn only completely opens or closes the valve.



**ANSWER:** The Zenith Refrigerator is made by Zenith Refrigerator Division, Marshall-Wells Co., Duluth, Minn. Perhaps if you write them, you can obtain some additional information on this machine.

One of several things could cause the trouble you describe: (1) Congealed oil could be partially clogging the capillary tube. (2) The system may be low on refrigerant. (3) Moisture in the system may be freezing at the outlet of the capillary tube, partially clogging it.

Freon systems, as you know, are very critical to small amounts of moisture, and since you have had the system open, it is highly probable that enough moisture has entered to cause trouble. Therefore, I think it is advisable to install a new dryer. These dryers will not clog up unless dirt from the system fills up the screen, but they simply reach the limit of their drying capacity, after which the moisture passes on through.

While you are changing the dryer, it might be well to test the capillary tube to see if it is clogged, but if either moisture or oil is partially restricting it, the tube will test all right while warm, but will still be restricted while cold, or while in operation. Warming the tube while the machine is in operation will usually clear it temporarily.

The refrigerant charge noted on the name plate is not always the exact charge for these machines because the charge in a capillary tube system is very critical and must be properly balanced. A few ounces more or less will cause improper operation. The usual method of charging is to charge in the approximate amount, then run the machine until the evaporator is cold enough to sweat. Additional refrigerant is then added until a cold or frosted suction line indicates the system is overcharged. Allow the machine to run in a few minutes to stabilize the charge—then purge until the frost line is within an inch or two of the evaporator. Sufficient time must be allowed between each purging to permit the charge to stabilize at a normal distribution.

Probably, there are two reasons for the oil troubles in the ammonia system described. First, every ammonia system should be provided with some method for positive oil removal and probably in the second case, an inferior grade of oil has been used, because it is unlikely that a good grade of oil would remain in suspension in the ammonia as you describe it.

From the description you give of the situation, it appears that the only effective

course would be to discharge the oil and ammonia mix from the system and then clean the oil out of the coils with steam. They should then be dried with warm air circulated through them. When cleaning is complete, an oil drain connection should be made to the coils. Probably the suction header already contains provision for such a connection, but the erector neglected to connect an oil drain pipe into it. If no opening is provided, one should be made in the lower part of the suction header.

The ordinary oil trap will not remove more than a small portion of the oil from the hot discharge gas. That is the reason it is necessary to have the above provision for the removal of oil from the coils. The oil trap, however, should be kept drained of all the oil it will collect. The use of a good grade of ice machine oil purchased from a reputable source cannot be overemphasized because poor oil will cause trouble no matter how well the system is designed or operated.

## HOW TO DISPOSE OF DISCHARGED SO<sub>2</sub>

**QUESTION 553:** I have my shop located at my home, which is in the residential section. I would like to know of a way to purge SO<sub>2</sub> machines, without harming the surrounding garden and lawns. During the winter, I don't have any trouble, but in the summer time, it is almost impossible to do any amount of purging without the usual drying up of greens.

I would like to know if it would be possible to use an old range boiler, and sink it into the ground, straight up. This would leave the bottom of it about six feet under ground. I thought of closing the top holes except one which would have a fitting, so the gas could be purged in it, and then leave the bottom holes open so that the gas could seep out into the ground, although ordinarily, there would not be such a great amount of gas purged at one time.

What I would like to know is whether or not this gas could come back up and cause any damage to the surrounding ground? The nearest place the gas could do harm would be about eight feet from the tank. Any information you can give me on this will be greatly appreciated. I have been receiving the RSE for the past four years and am a member of the RSES of Twin Cities.

(Continued on page 52)



## *A New Consciousness*

Throughout our land the thinking of young and old alike is changing. Machines, and all things mechanical, which were once taken for granted by many, are now familiar items. With record-breaking production there's an awareness of America's ability to produce better and better machinery of all kinds.

In the future this new appreciation of the mechanical will mean customers aware of better products . . . customers who will specify definite manufacturers because they will KNOW top quality.

While PAR Condensing Units have always been outstanding in their field, new developments and procedures created with our war assignments will make these condensing units even better . . . condensing units that will attract the keen, new market of tomorrow.

*Manufacturers of*  
**PAR** Commercial Refrigeration Equipment

**PAR**  
DIVISION



LYNCH MANUFACTURING CORPORATION • DEFIANCE, OHIO U. S. A.

# Replacement Training Center at Camp Lee Makes Refrigeration Specialists

**NOTE:** An article in the June issue told about the organization and course of training offered by the Quartermaster Replacement Training Center Refrigeration School at Camp Lee, Virginia. This article introduces and gives a personal sketch of the instructional staff.

ONE of the outstanding reasons for the successful performance of Quartermaster refrigeration activities in the field of battle is the thorough training in the principles and practical applications of refrigeration which has been given hundreds of trainees at Camp Lee, Va., in the Quartermaster Replacement Training Center's Refrigeration School since its inception in April, 1941. The fact that the training is so thorough, despite the short amount of time necessarily allotted the program, is due largely to the teaching ability and the wide experience of the instructional staff.

Head of the School is Major Allan N. Johannesen, who was connected with the ice plant operation and maintenance division of the Florida Power and Light Company after studying engineering at Purdue University. Major Johannesen has had wide experience in maintenance work on power and refrigeration equipment of all kinds.

Captain Robert O. Cropper is a graduate of the University of Kentucky in mechanical engineering. He was three years with E. I. du Pont de Nemours and Co., Birmingham, Alabama, and Newport, Delaware, as power plant engineer supervising maintenance of refrigeration equipment for the manufacture of nitroglycerine. Later he was with the Utilities Branch, Corps of Engineers, at Fort Knox, Kentucky, for six years as chief operating engineer of refrigeration and heating equipment, including cold storage and ice plant. He has been an instructor in the Refrigeration School since May 25, 1942.

Lieut. Max B. Fanning attended Bates College and the University of West Virginia, where he majored in mathematics. He was with the Northeastern Sales Corporation (now the Lewiston Maytag Company), Lew-

iston, Maine. As production manager, he supervised the maintenance of all refrigerating equipment sold by the company.

Lieut. Ralph E. Orcutt was in the research department of the Carrier Corporation at Syracuse, N. Y., prior to his entering the Army. Inducted in February, 1941, he serviced refrigeration equipment at Camp Blanding, Florida, for two months. He was then transferred to Iceland, where he was in charge of refrigeration for the Quartermaster Corps for fourteen months. He was commissioned in February, 1943, following training at the Quartermaster Officer Candidate School at Camp Lee.

Master Sergeant Elton W. Mattson did general commercial and domestic refrigeration service work while attending high school. He was refrigeration engineer for the Chrysler Airtemp Corporation of Minneapolis, Minn., and later was with Peerless Coil Company in Chicago, where he did silver soldering, service repairs and engineering work. He entered the Army in 1941, and has been an instructor in Refrigeration School since March of that year.

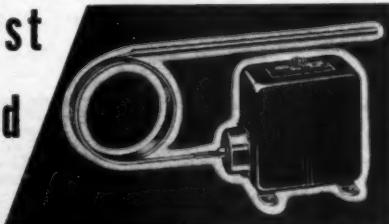
Staff Sergeant William L. Burgard was with the York Ice Machinery Corporation for over two years as a student, erecting and servicing various types of refrigeration equipment, commercial and industrial. Later, he was with the Elliott Lewis Company, Philadelphia, as sales engineer. Upon induction into the Army he served with the 80th Engineers as maintenance man and operator for air conditioning units on mobile topographical map reproduction units. He was assigned as instructor in Refrigeration School in January, 1942.

Sergeant Edmund B. Wolf has had wide experience in servicing domestic and commercial refrigerating units. He was employed by the Acme Refrigeration Company, the Dahill Refrigeration Company, and the Consolidated Refrigeration Service Company, all in the New York City district.

Sergeant Peter N. Copanas served as ice cream maker's helper for the Dolly Madison

# ★ AVRGAIRE

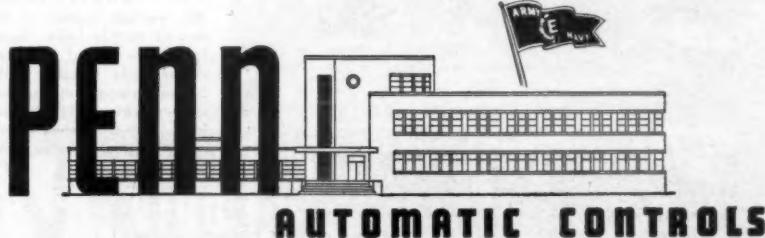
protects against  
SPOILAGE and  
SHRINKAGE



★ With our meat supply so critically short of all demands, any avoidable loss in storage amounts to sabotage. Penn Avrgaire is an effective weapon in the battle to save food because it automatically controls both temperature and humidity to provide double protection.

Designed for "above freezing" jobs in walk-in coolers and reach-in cases, Avrgaire holds temperatures closely at the selected level...maintains correct humidity...prevents both dehydration and excessive sliming, with their consequent shrinkage or trimming. Avrgaire delays defrosting when the box is under a heavy load and thus keeps temperature steady and avoids erratic short-cycling.

When existing controls cannot be made to function efficiently we are prepared to supply Avrgaire, and other Penn refrigeration controls, to meet the need for food preservation, under established priority rules. *Penn Electric Switch Co., Gosben, Indiana.* In Canada: Powerlite Devices, Ltd., Toronto, Ont.



FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Ice Cream Company, Syracuse, N. Y., and as ice cream and mix maker for the Queen Anne Ice Cream Company, Syracuse, owned and operated by his family. In the latter company he supervised the making of the ice cream and mix, and tested for butterfat and for sourness. He helped install a 45-ton refrigerating system. He has been instructor at Refrigeration School since October, 1942.

Sergeant Harold M. Sudler, a native of Connersville, Indiana, was formerly em-

ployed by the Akron, Ohio, Board of Education. He holds a second-class stationary steam engineers license in Ohio. He studied refrigeration at the Hower Trade School in Akron. He has been an instructor at Camp Lee since January of this year.

Corporal Melvin E. Griffing, of Bridgehampton, N. Y., was a service engineer for three years with the Kelvinator Corporation. In 1937 he organized the Eastern Refrigeration

(Continued on page 46)

**Right:**—Master Sergeant Elton W. Mattson, an instructor at the Camp Lee, Va., Quartermaster Replacement Training Center Refrigeration School, is shown explaining the Absorption System to trainees of the School. All phases of refrigeration, mechanical as well as absorption, are taught in the School, so that when the refrigeration soldiers reach the field, they can operate and repair any equipment at hand.



**Left:**—Sergeant Edmund B. Wolff, an instructor in the Camp Lee, Va., Quartermaster Replacement Training Center Refrigeration School, is shown describing the operations of a Quartermaster mobile refrigeration company through the various zones of the Army's supply lines. Sand-tables are one of the many visual aids used by the School to acquaint Quartermaster refrigeration specialists with the job they will do when they join active Army units.

# THE STANDARD OF Enduring Craftsmanship

*The Art of Carriage Making at its peak.*

Amesbury, Mass., 1860



Although the history of their craft stemmed from the two-wheeled chariots of the ancient Egyptians, it was in the youthful United States of the 19th Century that the art of carriage-making finally flowered.

When the advent of the motor car doomed their business, the master craftsmen of the carriage-building trade quickly adapted their skills to the infant industry. Thus the perfect craftsmanship attained in horse-drawn transportation provided the refinements which made motor transportation so rapidly popular.

*Adaptability to changing conditions is one of the important elements of success in modern manufacture. Constantly improving a standard product by minute attention to the requirements of the trade is Virginia's way of serving the consumer better.*



"EXTRA DRY ESOTOO", "V-METH-L" AND METHYLENE CHLORIDE

**"VIRGINIA" REFRIGERANTS**  
AGENTS FOR KINETIC'S "FREON-12"

**VIRGINIA SMELTING CO.**  
WEST NORFOLK, VIRGINIA

# Refrigeration Serves Armed Forces in North Africa

**S**OMEWHERE in North Africa a new type of "mobile division" went into action, the first of its kind in existence. It consists of only three trailers, but they are the first of their kind and promise to be models for an expanding fleet.

One trailer is the mobile kitchen with refrigeration for food preservation and air conditioning for the eating quarters. Another is a sleeper trailer which is air conditioned. The third is a semi-trailer refrigerated and used for food storage. The fleet is for the accommodation of engineers and technicians constructing advance bases for troops under oppressive climatic conditions.

This mobile division was specially designed by Parkway Motors of Washington incorporating Carrier air conditioning and refrigeration and built in March of 1942, shipped to North Africa, and has been operating there since last June.

## Cooler Quarters Necessary

Previous experience under such working conditions had shown that some sickness occurred shortly after a crew was transferred from a temperate zone. In some cases, working efficiency was reduced.

This proved the necessity of cooler quarters and protection against insects and germs at meals and during sleeping hours. The answer was provided by Parkway in designing the mobile bunkhouse, food storage and kitchen, the latter having a screened-in wing which serves as the dining room and is erected adjacent to the kitchen proper. A view of the refrigerating equipment installed in the kitchen trailer is shown on the front cover of this issue.

Both the kitchen and sleeping unit were equipped with Carrier air conditioning capable of maintaining clean, cool air in circulation even when the temperature outside hit as high as 180° F. Neither of the Carrier units have required any spare parts nor have they failed in operation once despite the fact that they have been in operation continuously since June 1942 according to official reports.

The mobile kitchen was originally designed to feed 100 men but proved adequate for 800 when put in operation. It was completely equipped before shipment with stove, utensils, silver and china as well as a refrigerator with Carrier automatic temperature control.

The air conditioned bunkhouse sleeps 24 persons in individual beds and six more in hammocks which can be slung in the aisle. Fluorescent lighting, shower bath, lavatory and screened doors and windows are other features. The Carrier air conditioning equipment on both units can be run on AC, DC or gasoline engine. Additional models are now on order by the War Department.

## Unit for Frozen Food

A third type of trailer also manufactured by Parkway, is the mobile refrigerating unit for frozen food, an assembly which can be loaded on the deck of a transport and driven off onto the dock and to any desired destination at the receiving end. This eliminates extra loading operations and expedites movement of food.

A temperature of zero degrees Fahrenheit is maintained in the food trailer except in the vestibule opening onto the two main refrigerator compartments. The vestibule, designed to prevent excessive rise in temperature due to entrance of outside air, may be held at a temperature as low as 30° F. and can be packed with foods not requiring extreme cold when the unit is shipped.

The Carrier refrigerating unit is employed which can run on AC, DC or a self-contained gasoline driven electric generating plant. Both of the main refrigerator compartments have a capacity of 260 cubic feet and are equipped with manually controlled thermostats.

A variation of this unit, also made by Parkway, is the refrigerated "lift box" which has 206 cubic feet capacity and weighs approximately 6,000 lbs. This is not a mobile unit but is designed primarily as a refrigerated storeroom which can be hoisted into the ship's hold and onto the dock on arrival.

# Look for the "RECALIBRATOR"

The mark  
of a gauge  
that IS  
accurate

-and  
STAYS  
accurate

THERE are two big reasons why so many refrigeration men look for the "Recalibrator" when it comes to gauges and dial thermometers. In the first place, the "Recalibrator" means that the instrument is made by Marsh — that it offers every measure of accuracy and stamina 75 years of specialization can produce.

Even more important — especially these days when gauges face harder and longer service—the "Recalibrator" is your assurance that accuracy is locked in. For keeps.

Any gauge ever made can be knocked or jolted out of adjustment. But with the "Recalibrator", the twist of a screwdriver sets it right in just a few seconds. Unlike ordinary "adjustments", the "Recalibrator" strikes at the very root of the error—actually reestablishes the proper relation between the bourdon tube and movement to make the gauge accurate again at all points on the scale.

The "Recalibrator" is standard in all Marsh Dial Thermometers, available in all Marsh Gauges. Look for it. And look for the same kind of advanced design throughout the broad Marsh line.

JAS. P. MARSH CORP., 2059 Southport Ave., Chicago, Ill.



# MARSH

Refrigeration Instruments

# New School for Refrigeration Service Men

## Planned for Washington, D. C.

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**I**N an effort to meet the demands of refrigeration service organizations unable to meet peak service calls because of the lack of mechanics, the Washington Electric Institute, Washington, D. C., has announced that it will sponsor a special training school to begin in July or August.

Not only long-established refrigeration service firms, but those appliance dealerships converted to service for the duration have been seriously hampered by the loss of men thought permanent. Slightly less than six months ago a study of available service mechanic personnel showed a slight surplus; enough, it was thought, to handle Washington's crowded responsibilities. Since that time, however, the loss of mechanics to the armed forces and to other occupations has been continuous. According to Joseph A. Doyle, assistant manager of the Institute and in charge of the new training program, the fifteen service firms belonging to his group and many dealers have lost from two to five men each; many of them believed permanently available before.

### Instructors Listed

All refrigeration service executives have been asked to furnish a list of personnel who are experts on various phases of the business; with the thought in mind that these may be used as instructors. Cooperative listing of all such men will enable the school to get under way with a good teaching staff, according to Mr. Doyle, which will also be augmented with instructors supplied by Washington vocational schools.

In order to meet all phases of the demand, the school will probably be broken up into separate classes to study home refrigerator repair and service, commercial equipment on a small scale, and large-tonnage equipment. Some air conditioning instruction will also be included.

The "students" in the school will be made up of men suggested by dealers and service managers; women, men exempted by physical reasons from military service, and possibly younger boys who must contribute to

the family's support. "We don't anticipate any difficulty in getting plenty of trainees," Mr. Doyle said, "And if possible will follow government methods in turning out well-trained, efficient mechanics in the shortest possible time."

### Demand for Service

Washington's unbelievably congested conditions, with four and five families living in homes which once held only one, were pointed to as the major reason for the all-time record demand for refrigeration work which has come piling in on most of the city's dealers. One firm, City Refrigeration, reported that it has turned down as many as 60 calls a week in recent months, some of them urgent. In almost all refrigeration service firms, women have taken over all jobs except the actual heavy work of repairing refrigeration units.

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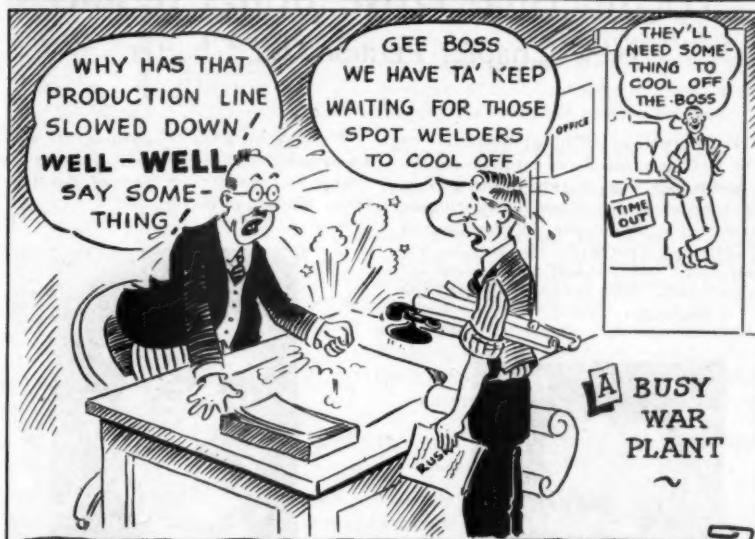
### REPLACEMENT TRAINING CENTER AT CAMP LEE

*(Continued from page 42)*

tion Service at Bridgehampton and operated it until induction in the Army in December, 1942. He attended the Rensselaer Polytechnic Institute.

Corporal Fred P. Di Cesare was educated at Ohio State and Louisiana State Universities. He received the B.S. degree in Mechanical Engineering from L. S. U. in 1933, and has had ten years of practical experience in general steel mill practices such as mechanical operation and erection. He invented, manufactured and sold the D. C. Coupling. He has had four years of practical experience in building a commercial refrigeration business, as owner, salesman, engineer, detailer and mechanic. Also while employed by H. P. Jones, consulting engineer for the city of Toledo, Ohio, he did layout work and inspected the city sanitary drainage and disposal plant. He has been teaching at Camp Lee's QMRTC Refrigeration School since February, 1943.

## IT HAPPENS EVERY DAY



To a degree far greater than is generally realized, refrigeration is being used as a tool to improve and increase the output of war equipment. Much, however, still remains to be done in this direction and the refrigeration distributor can make a valuable contribution to the war effort by placing his specialized knowledge and experience at the disposal of the war plants. To find out how you can best contribute to the war effort—write us today.

TEMPrITE PRODUCTS CORP., 45 PIQUETTE AVENUE, DETROIT, MICHIGAN

# Membership Drive Brings Results

## New Chapter Petitions for Charter

THE International Membership Drive of the Refrigeration Service Engineers Society got under way on July 1 with a rush. Forty service men in Bloomington, Illinois, petitioned for a charter to function as the "Corn Belt Chapter." The petition was accompanied by individual membership applications and a check to cover initiation and dues per capita tax.



SGT. H. T. McDermott, U. S. Army, who is taking a long-distance view of the race from his fox-hole in the Southwest Pacific.

Willis Stafford, Chairman of the International Publicity Committee, who is now Assistant Chief Instructor at the Commercial Trades Institute, Bloomington, was one of the key men in the organization of the new chapter. Henry Oakwood has been elected temporary Secretary-Treasurer and John E. Hamilton Temporary Chairman. Indications, according to Mr. Stafford, point to the establishment of a very fine chapter.

William Marshall, International Sergeant-at-Arms, who is Chairman for Region 1, including all of Canada, writes that the prospects for new members and chapters up his way seem to be bright. Mr. Marshall made his statement after a preliminary survey of his territory. He, like the other Regional Chairmen, is contacting the officers of all chapters within his zone of operations.

Warren W. Farr, Cleveland, O. who is Chairman for Region 4 is displaying much energy in contacting officers of chapters in Ohio, Michigan and Indiana.



E. A. PLESSKOTT, St. Louis, Mo. "Peerless Leader" of RSES, whose wisdom and experience guarantee success of drive for members.

"In spite of the fact that in Region 4, as elsewhere, many service men have gone to the armed forces or to war factories," writes Mr. Farr, "we have good reason to believe that we shall exceed our quota. Our members in this territory are not only loyal to the interests of RSES, but they have their eyes on the prize money."

C. V. Hale, a member-at-large in Norfolk, Va., has put on a one-man blitzkrieg to organize a new chapter in Raleigh, N. C., where a group of from thirty to thirty-five service men have displayed interest in becoming members. Raleigh is in Region 3, Claude Brunton, Huntington, W. Va., Chairman. Claude has the situation well in hand and has expressed a desire to accept the invitation of Mr. Hale to visit Raleigh and address the service men at the organization meeting. If he is unable to get away from his work, it is probable that he will delegate a member of the Virginia Chapter, located at Richmond, a short distance north of Raleigh, to do the job. In any case, a new chapter at Raleigh seems most probable.



"Postwar planning" is the order of the day. Our mail attests the fact that the former manufacturers in various branches of the refrigeration industry, are putting their plans on paper, at least, and some of them are considering new models of postwar products.

*This is a fact to hang your hat on!*

Tecumseh Products Company, while devoting their energies to direct munitions manufacture and refrigeration for the army, navy and essential civilian purposes, are now forming a postwar program and designing postwar products. These new units will employ the same sound engineering and precision manufacturing methods that have made Chieftain the leader in the independent manufacture of condensing units and compressors.

The new units embody these outstanding advantages:

1. **Greater Flexibility** in application.
2. **Expanded Range** of sizes.
3. **Adaptable** to any low side or expansion means.
4. **Improved Efficiency** of operation.
5. **Lower noise level.**
6. **Vibration** reduced to the vanishing point.
7. **New Materials and Machining Skills**, the outgrowth of our experience in munitions manufacture.
8. **Still Further Reduced Field Service**, based on our present enviable record.
9. **A Factory Rebuilding Plan** at nominal cost.
10. **Competitive prices**, so that the manufacturer can sell his completed products at a profit.
11. **The Best Buy** in refrigeration.

Postwar commercial refrigeration, as far as possible, will follow these principles:

1. **Hermetic Units** in fractional horsepower sizes.
2. **Pull-out Construction** in most applications.
3. **Separable High-Sides** only where necessary.
4. **Self-contained Construction** will replace the multiple systems, except for large or processing installations.

★ *Hang your hat on Chieftain  
in your Postwar Planning!* ★



**Chieftain**

TECUMSEH PRODUCTS COMPANY  
TECUMSEH \* \* \* MICHIGAN

R. C. Kimmel, Denver, Colo., Chairman for Region 8, writes that the International Membership Drive was one of the main topics of discussion at the annual picnic of the Mile High Chapter, which was held at the Elitch Gardens and was attended by more than sixty members. Mr. Kimmel has mapped out a careful plan for covering his far-flung territory by both personal and mail solicitation.



WILLIS STAFFORD, Bloomington, Ill. Proud father of the new "Corn Belt" Chapter.

Erwin F. Meyer, Secretary of Mississippi Valley Chapter No. 1, at Davenport, Iowa, writes: "We will get the membership drive rolling at the next meeting. We had a successful drive last summer, but know that a considerable number of service men now in our chapter area are not yet members. We hope to secure them, and are confident that we shall be able to do so."

Harry Alter, of the Harry Alter Co., 1728 S. Michigan Ave., Chicago, who is President of the National Refrigeration Supply Jobbers Association, has taken an active interest in the RSES International Membership Drive. To J. W. Power, Acting Secretary, he said:

"Speaking for my own company, I assure you that we shall be glad to help in every possible way to put the membership drive over the top for the service men. I guess there has never been a time when additional service men were more urgently needed than right now. Please send me a bunch of membership application blanks. We shall not hesitate to suggest to our customers who are not members that they can join RSES with benefit. If you will send a letter of explanation, covering the purposes of the drive,

to all members of the National Refrigeration Supply Jobbers Association throughout the country, together with application blanks for distribution, I am sure that they will be glad to cooperate in similar fashion."



H. W. FARR, Cleveland, Ohio.  
Chairman, Region 4.

H. W. Blythe Co., jobbers at 2384 S. Michigan Ave., has made a similar offer of friendly cooperation. Several manufacturers have written, volunteering to join in the drive.



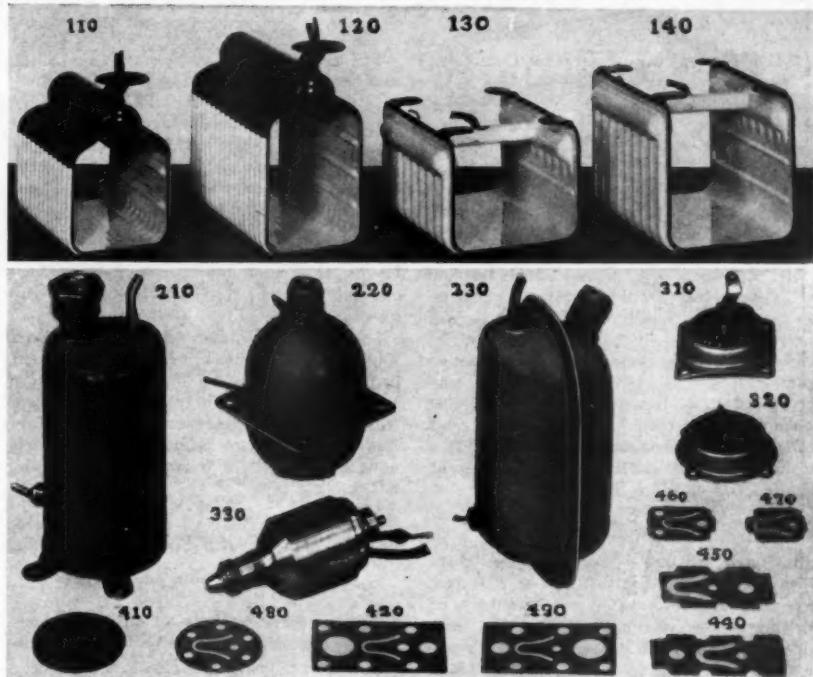
JOHN K. BUSH, Lockport, N. Y.  
Chairman, Region 2.

It is most pleasing that manufacturers and jobbers are showing a willingness to help, and all offers have been accepted with thanks. Through the many contacts which both manufacturers and jobbers have with service men, a considerable number of new membership applications is anticipated through these sources.

(Continued on page 54)

# FOR SALE! —WHILE THEY LAST—

## Used Evaporators and High Side Floats



### EVAPORATORS—FLOODED TYPE—LIKE NEW Black, white and combination.

110—Two Tray Goose Neck.....	\$6.75
120—Three Tray Goose Neck.....	
130—8½" w. 7½" h. 11½" d. Mounting holes 6" across front; 8" front to back	
140—8½" w. 9½" h. 11½" d. ....	

### HIGH SIDE FLOATS—FIRST CLASS CONDITION

210—Used on Westinghouse Units.....	\$3.25
220—Ball Type .....	
230—Can be mounted in back of refrigerators.....	

### USED GENUINE WESTINGHOUSE PARTS IN GOOD CONDITION

310—Circuit Breaker .....	\$.75
320—Circuit Breaker .....	\$.75
330—Unloader Valve in Good Condition and Tested.....	\$4.75
410—Discharge Valve Plate.....	\$2.35
420—430—440—450—Valves .....	\$.50
460—470—480—Valves .....	\$.35

Prices F. O. B. Chicago, Ill.

**ACME REFRIGERATION PARTS CO.**  
**5217 W. Madison St.**      Telephone **Columbus 4141**      **Chicago, Ill.**

## Mayflower Plant Purchased—Moved to Richmond, Ind.

THE Mayflower Refrigeration Company, formerly of Dayton, Ohio, has been purchased by Brouse D. Rinehart and moved to Richmond, Ind., where Mayflower parts and equipment will be manufactured and distributed, under the name of Mayflower Products, Inc. The new enterprise has been housed in a building at 18 South 5th St., in the business section of Richmond.

Mr. Rinehart is a native of Richmond. After attending Purdue University where he majored in electrical engineering, he entered the refrigeration field in 1930 in Richmond, selling commercial and domestic refrigerators. In 1937 the business was incorporated as Rinehart, Inc., and it has continued since then as a refrigerator and radio, parts and jobbing business. This business will be continued at its present location, 511-18 Main St.

### All Parts Available

Included in the transfer of the Mayflower assets are the tools, dies, patterns, jigs and fixtures, and parts inventory of Mayflower commercial refrigeration and air conditioning. A letter to the trade announces that the sole activity of Mayflower Products, Inc., will be the manufacture, distribution and servicing of the complete line of Mayflower commercial refrigeration and air conditioning equipment. Manufacture of these compressors and air conditioners will be continued under the same model number and parts number as used by Mayflower in the past.

A new parts and price list of genuine Mayflower parts will be available soon and will be mailed upon request. Replacement parts are on hand for immediate shipment on orders carrying required priority rating. Service organizations are advised to contact their jobbers for parts and equipment.

The building housing the new company is equipped with modern facilities for production of refrigeration and air conditioning equipment. Plans are being made now for post-war production of a number of new engineering developments in this field. Inquiries regarding any special engineering problems will be welcomed.

The Mayflower Refrigeration Co. dates back to about 1920, at which time compressors were called the "Valley" refrigerator. In 1927 the concern was taken over by the Trupar Mfg. Co. of Dayton which produced the "Everite" refrigerator. In 1929 the name was changed and the product was known as the "Mayflower," which it has remained ever since.

In 1934 the business was sold, Homer Hardy of Dayton taking over the commercial refrigeration part which has now been purchased by Mr. Rinehart.

During recent years Mayflower pioneered some of the earliest multiple apartment installations and many of these units were sold all over the country. This latest deal will make it possible for owners of Mayflower equipment to obtain Mayflower parts and repairs with a minimum of time and effort.

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### THE QUESTION BOX

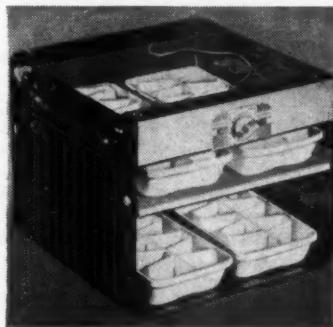
(Continued from page 38)

I certainly have gotten a lot out of the question box as well as the rest of the articles in the magazine.

**ANSWER:** I have never heard of disposing of  $\text{SO}_2$  through the medium you suggest. Therefore, I am not in a position to say whether or not it will work. It would be my opinion, however, that this gas must go somewhere, and that eventually it must seep up through the ground to the surface. Just how wide an area would be affected is a guess, and without experience in the matter, I would be afraid to hazard an opinion.

Two other methods of disposing of this gas are: (1) To discharge it into a solution of lye water. Ordinary household lye is suitable and it is only necessary to dissolve a can of it in approximately a gallon of water. This solution will absorb the refrigerant until the solution is worn out, at which time it will have to be replaced. (2) Another method is to use an old condensing unit to pump out the system and to condense the discharge gases. The refrigerant then can be disposed of in liquid form at some distance away from shrubbery and flowers.

# G & E SUPER VALUES



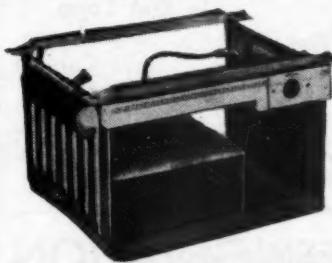
## Porcelain Evaporator—No. 6906

Dry expansion household evaporator for freon, methyl or sulphur for all domestic refrigerators. Has continuous copper tubing metallically bonded below tray. 11½ in. wide, 11½ in. deep, 9 in. high. 4 tray with front plate. For use with either expansion valve or capillary tubing.

**\$9.95**

Evaporator—4 steel baked white enamel trays. Cutler Hammer Cold Control. Complete

**\$15.90**



## Electro Tinned Evaporator—No. 7908

This beautiful eight tray fast freezing Steel Electro Tinned, dry expansion household Evaporator for freon, methyl or sulphur, ideal for all makes of refrigerators. Has continuous copper tubing metallically bonded below tray. Inlet tube  $\frac{1}{8}$  in. outlet  $\frac{1}{4}$  in. 13½ in. wide, 9 in. high, 11 in. deep. with front plate. For use with either expansion valve or capillary tubing.

**\$11.50**

Evaporator—1—11 x 8½ in., 6—11 x 3½ in. Steel Trays. Cutler Hammer Cold Control. Complete

**\$21.50**



## Low Side Float Assembly for Mullins Evaporator—No. 6907

A lucky purchase of the surplus stock of a large manufacturer enables us to pass on this tremendous float value to our customers. A combination lowside float assembly for

Mullins evaporators with forged brass header. Complete

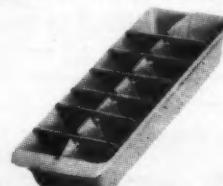
**\$6.75**



## Switches for Interior Light

No. 6011—Underwriter's Approved Light Switches for installation inside operated by door. 2½" wide, 1½" high. 10" cord. chrome finish. In lots of 10

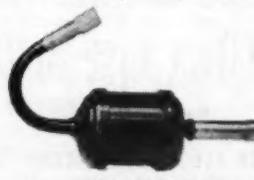
**19c ea.**



## Quick Release Ice Cube Tray

No. 7000—All steel ice cube tray, gray finish, with flexible grid. Ejects all cubes at one time. 11" x 3½" x 1½". In lots of 12

**73c ea.**



## Dehydrator

No. 6115—Silica Gel Dehydrator, hydrogen welded steel body 1¼" diameter, 2" long. Can be used on hermetic or open type units.  $\frac{1}{4}$ " inlet tube. Lots of 10

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Is Our Long  
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THE DAYTON RUBBER CO.  
**V-BELTS**

**FOR ALL LEADING MAKES OF  
HOUSEHOLD APPLIANCES**

In the interest of conservation, see that Victory Vital  
V-Belts are properly installed with rust-free pulleys  
in correct alignment and with proper belt tension.

**THE DAYTON RUBBER MFG. COMPANY**  
THE WORLD'S LARGEST MANUFACTURER OF V-BELTS  
DAYTON, OHIO

DAYTON RUBBER EXPORT CORPORATION  
38 Pearl Street, New York, N. Y., U. S. A.

## MEMBERSHIP DRIVE

(Continued from page 50)

Here are the nine Regions for the International Membership Drive with the names and addresses of the Regional Chairmen:

**REGION 1**—Dominion of Canada—William Marshall, Regional Chairman, 105 Donegal St., Leaside, Ontario, Canada.

**REGION 2**—Maine, New Hampshire, Massachusetts, Vermont, Rhode Island, Connecticut, New York and Pennsylvania—John K. Bush, Regional Chairman, 9 Summer St., Lockport, N. Y.

**REGION 3**—Delaware, Maryland, North Carolina, South Carolina, Virginia, West Virginia, Kentucky and Tennessee—C. A. Brunton, Regional Chairman, 309-32nd St., Huntington, W. Va.

**REGION 4**—Indiana, Ohio and Michigan—W. W. Farr, Regional chairman, 1127 Carnegie Ave., Cleveland, Ohio.

**REGION 5**—Alabama, Florida, Georgia, Louisiana, Mississippi, Texas, Arkansas and Oklahoma.—E. A. Summer, Regional Chairman, 8867 N. 33rd St., Baton Rouge, La.

**REGION 6**—Illinois, Iowa, Minnesota, Missouri and Wisconsin.—C. Buschkopf, Regional Chairman, 211 Gould St., Beaver Dam, Wisc.

**REGION 7**—North Dakota, South Dakota, Nebraska and Kansas—C. J. Doyle, Regional Chairman, 4302 California St., Omaha, Nebraska.

**REGION 8**—Montana, Colorado, Wyoming and New Mexico—R. C. Kimmel, Regional Chairman 1401 S. Steel St., Denver, Colorado.

**REGION 9**—Idaho, Arizona, Utah, Nevada, California, Oregon and Washington—J. L. Driskell, Regional Chairman, 286 N. Almo Ave., Burley, Id.

Prizes have been authorized by President E. A. Plesscott as follows:

\$25 in cash to the chapter making the best showing.

\$15 in cash to the chapter making the second best showing.

\$10 in cash to the chapter making the third best showing.

\$25 war bond to the Regional Chairman who secures the greatest number of new members beyond the quota for his territory.

Each Region has been assigned a quota amounting to 50 per cent of present membership, chapter and at large, within the territory.

# FOR IMMEDIATE DELIVERY

## We Have On Hand:

Alco Ammonia Thermo Valves—1-2-5 & 10 Ton Capacity. Refrigerant Solenoid Valves,  $\frac{3}{8}$ ". Dehydrators— $\frac{1}{4}$ "- $\frac{3}{8}$ "- $\frac{1}{2}$ ". Complete Stock of Refrigeration Supplies. Send for Catalogue.

**FRED C. KRAMER COMPANY**  
212 N. Jefferson St. CHICAGO, ILLINOIS

### INDUSTRY ADVISORY COMMITTEE MEETS WITH WPB

PROBLEMS involved in keeping the domestic mechanical refrigerators in American homes in operation were discussed at a meeting of the Mechanical Household Refrigerator Industry Advisory Committee with War Production Board officials.

The meeting was called at the request of the WPB's Office of Civilian Requirements to obtain information from the industry on the maintenance and repair situation.

"This Office," said Henry L. Dinegar, Chief of OCR's Consumers Goods and Products Division, "is definitely committed to a policy of keeping household refrigerators in operation. We want to do whatever necessary to make that possible."

The manufacturers said that in general the parts situation is satisfactory but that manpower shortage is giving considerable difficulty to distributors and dealers in meeting repair demands. They felt that the only solution to the manpower shortage was draft deferment of skilled mechanics and key workers. An OCR representative offered to seek the assistance of the War Manpower Commission in meeting the situation.

Committee members estimated that their 1944 requirement of critical materials for manufacture of repair parts would be at least 50 per cent greater than this year's.

\*\*\*

B. B. Hursh  
Wilmington, Ill.

THE ENGINEER is always interesting and I like the Question Box best. It makes one think before he reads the answer. Service management articles are also very good, but the new department telling how servicemen have overcome difficulties is a honey.



## USE VISOLEAK

Ally yourself with the Industry program of CONSERVATION.

SAVE refrigerant and time.

SIMPLIFY leak detection problems.

VISOLEAK shows you those "hard-to-find" leaks, and is successful with all refrigerants. Use four fluid ounces plus one ounce for each 10 lbs. of refrigerant to treat a system.

4 Ounce Size.....	\$ 1.00
8 Ounce Size.....	1.75
1 Pint Size.....	3.00
1 Quart Size.....	5.00
1 Gallon Size.....	16.00

Buy it from your jobber or write direct to

**WESTERN THERMAL EQUIPMENT CO.**  
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## "THE LITTLE MAN WHO WAS THERE"

YES, he's a service man, dolled up and going to the bank to deposit profits. One reason he can do this is that in his truck, out on the job, he carries

**HERVEEN**

## THE REPLACEMENT GAS for METER-MISERS

HERVEEN, the modern replacement gas for servicing Frigidaire Meter-Misers, saves call-backs, thus conserving precious gas, rubber and time.

With HERVEEN a service man can handle many more calls during these busy days. By so doing he increases his profits.

HERVEEN is reliable, safe and satisfactory in performance. Most jobbers stock HERVEEN, but if yours doesn't, write direct to

**MODERN GAS CO., Inc.**  
*Manufacturers and Refiners*  
1084 Bedford Ave., Brooklyn, N.Y.

## LET'S BE FAIR

MANY of the refrigeration service men who have entered the Armed Forces have had to give up personal service business that has taken years of hard work and sacrifice to establish. Now they are forced to give all this up so they might serve our country is imposing on them a sacrifice that should be recognized and appreciated by those of us who remain at home. As many of these boys will some day want to return to take up where they left off, I believe it should be a solemn obligation of us who remain behind to see that they can do so without any interference on our part. There is more work now than we can hope to take care of so, there is no reason why we can't help these boys keep their customers and yet help the unfortunate users who have a breakdown of their refrigeration equipment.

As an example, we had in our community a fine young chap who was an excellent service man and who from a competitive standpoint was 100% fair. Recently the boy went into the Seabees and now with him gone I am receiving work from many of his best customers. When I receive a new account I have always made it a policy to ask the new customer how he heard of us which gives me a check on my various means of advertising. I also ask who has been servicing their equipment explaining for this rather personal question that all the established service men belong to the local R.S.E.S. and as members we do not regard one another as competition but try to help one another and that I may get information from their former service man that will help me on their particular equipment. Whenever a new customer tells me that Mr. X who has entered the Seabees was their service man I reply, "Mr. Jones, you no doubt know that Mr. X your former service man is now serving our country as a member of the U. S. Navy. I will be very glad to help you with your service problems while he is gone, but I believe it no more than fair to him that when he comes home again that you give your business back to him." By doing this we can all give these fellows who have left their business to defend us from aggression something to look forward to when they return.

No doubt many of these boys in service now think that they have lost their business, but if we will all truthfully and sincerely follow this plan they will have a chance. So come on fellows let's be fair with the boys

who are fighting for us and just remember that there is room in the world for all of us and if there wasn't we wouldn't be here. Although when I think of Tojo, Hitler, Mussolini and Company I sometimes doubt this, but then to think of it they won't be here much longer.

*E. L. Minch, Pres. Portsmouth, Ohio Chapter R.S.E.S.*

\*\*\*

## R.S.E.S. Chapter Notes

### LOS ANGELES CHAPTER

*May 26*—The meeting was held in the Royal Palms Hotel, and as usual, was preceded by a dinner. A round-table introduction of members and visitors started off the meeting, then Messrs. Cox and Kirkham were given charge of the defense stamp sale in preparation for the drawing at the end of the meeting.

A new membership index was distributed at the meeting listing eighty-two, which was a considerable increase over the previous index. Mr. Irving then presented a short discussion on post-war business, advising members to explain present war-time conditions to their customers, so that they would be appreciative of the difficulties encountered at the present time. He also suggested that now is the time to advertise for the business you expect to receive after the war. Through advertising at this time, your company name will be kept before the public, and will maintain the good will of your customer.

Applications for membership were received from Messrs. A. Held, Robert H. Tasker, and E. G. Phares. The guest speaker of the evening was Mr. Roscoe Miller, who has been in the South Pacific war zone since January, 1942, as a refrigerating engineer. His experiences were most interesting to the meeting. The balance of the meeting consisted of reports from the committee chairman, and a reading of the treasury report.

During the defense stamp drawing at the close of the meeting, it was revealed that \$15.00 in stamps had been sold. The winners were: C. O. McClellan, now in the U. S. Army; Bill Irving and Carl Gibbs.

### KANSAS CITY CHAPTER

*May 11*—The meeting was held in the offices of Temperature Engineering Corporation. Mr. Visger reported that thirty-one persons had made a blood donation to the

## Motor- Starting CAPACITORS



● Despite tightening restrictions on capacitor production, Aerovox still offers an adequate selection of exact-duplicate or universal-replacement capacitors for every standard capacitor-start electric motor.

Refer to the latest Aerovox capacitor listings for the types still available. You can readily pick out the **RIGHT** capacitor for that job.

And remember, Aerovox jobbers carry a stock of capacitors for your convenience. This insures a ready supply, close at hand, for prompt delivery and profitable servicing.

### • See Our Jobber . . .

Consult him regarding your motor-starting capacitor requirements. Ask for latest Aerovox motor-starting capacitor catalog—or write us direct.

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Red Cross, volunteering through the efforts of the R.S.E.S. A considerable portion of the meeting was devoted to the membership drive, correspondence concerning which had been received from S. B. Garland, International Second Vice-president. Mr. Tramposh suggested that in the contest to come by the two leading teams of the Chapter that the losing team give a dinner for the winning team at the President Hotel Coffee Shop. The chairman of the losing team would make all arrangements.

Discussions on how to improve attendance of the meetings resulted in the Secretary being instructed to write all new men who had not yet been initiated requesting their attendance at the next meeting. On the educational program, deep freeze cabinets and their use after the war was discussed; also possible new developments in the field of refrigeration.

#### MILE HIGH CHAPTER

*June 14*—After some discussion of the forthcoming picnic, several practical questions from the floor regarding refrigeration problems occupied a considerable portion of the meeting. Following this, the annual

election of officers took place with the following being elected: *President*, Leonard Martin; *Vice-President*, Chas. Land; *Secretary-Treasurer*, R. C. Kimmel; *Sergeant-at-Arms*, L. W. Barley.

The new officers immediately took charge of the meeting, and newly elected President, Martin, gave a talk of acceptance, stating that he would do his best to fill the office he was elected to. Some time was devoted to planning the new membership drive, starting July 1, and the Secretary was instructed to write all prospective members as the first contact on the drive. Refreshments were served following the meeting.

#### MISSISSIPPI VALLEY CHAPTER

*June 8*—Herman Goldberg came to Davenport (without Freon) on this night where the chapter assembled twenty of its members for its regular monthly meeting. The business at hand was merely routine, but as a special feature, we had on hand a most welcome guest, Herman Goldberg. Herman was very unfortunate in having his visit coincide with the first week of our worst Freon shortage—some of the boys even bringing their empty drums to the meeting.

*Superior has gone to War!*

- ★ DIAPHRAGM PACKLESS VALVES
- ★ PACKED AND PRESSURE CUP VALVES
- ★ CHECK VALVES AND LIQUID INDICATORS
- ★ DEHYDRATORS AND FILTERS
- ★ MANIFOLDS AND HEAT-EXCHANGERS
- ★ FITTINGS AND ACCESSORIES

Even though we are working "round the clock" on implements of war, every passing month strengthens our conviction that refrigeration equipment is so vitally essential that we should continue to allocate an increasing percentage of our manufacturing facilities, personnel and planning to our refrigeration products.

THAT'S OUR POLICY . . . continuing to do even a better job of supplying, as promptly as conditions will permit, more valves, manifolds, heat exchangers, dehydrators, liquid indicators, fittings and accessories to manufacturers, jobbers, installers and service engineers.

Write for Copy of Catalog B-2

No. 67

SUPERIOR VALVE & FITTINGS CO.  
1509 WEST LIBERTY AVENUE  
PITTSBURGH  
PENNSYLVANIA

when they heard he was coming. Of course, he was unable to help them any that way, but everyone felt much better after Herman explained the cause and the eventual remedy for the situation.

After the regular talk, Herman stuck his neck out by offering to answer questions, and from then on, he was plenty busy. A good many of the details were cleared up that way that had been bothering the fellows recently.

Due to a shortage of red points in this vicinity, there were no refreshments, but if the boys get busy and feed the kitty to its capacity, the entertainment committee has something in store.

#### TWIN CITIES CHAPTER

*June 1*—The meeting was called to order by President Ost, and after a reading of the minutes and the Treasurer's report, the various committees reported on their activities. Among these was a discussion by the educational committee of the revised L-88 order controlling the return of old parts, etc. Some discussion was held on the forthcoming picnic and a committee consisting of Ehlers, Holmes, McCafferty, Klahn, Weiner and Frank was appointed by Ost to make arrangements and estimate expenses. McCafferty was appointed Chairman of this committee.

#### MILE HIGH CHAPTER

Gasoline rationing and curtailment of motor travel did not hamper the style of the Mile High Chapter in their plans for a picnic this year. Instead of holding their annual outing in some out of town spot requiring motor traveling to reach it, they chartered a special street car from the Denver Tramway Co. and spent a Sunday at Elitch Gardens. Arrangements were made to meet at one of the city corners where they boarded their special transportation facilities. Each party took a basket lunch and each one came prepared for a full day of amusement. A large part of the refreshments were furnished by Harvey Olmstead of the Penn Electric Switch Co., Benn Franklin of the Detroit Lubricator Co. and Paul Hathaway of Imperial Brass Manufacturing Company.

A surprise of the day occurred when the boys got together and collected sufficient money to buy a Super-Duper Deluxe high chair for presentation to three weeks' old Douglas Charles Kimmel, who was born Tuesday, June 8.

## REFRIGERATION PARTS NEEDED

● Idle and surplus inventories of refrigeration parts can now be put to essential use in helping to maintain the nation's huge investment in refrigeration.

We buy outright for cash, usable parts for distribution to over 20,000 refrigeration service-men customers. Let us put your idle inventories to good use — you will then be helping conserve scarce and precious materials.

**The Harry Alter Co.**

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**ELECTRIMATIC  
REGULATING  
VALVES**

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**For FREON  
SULPHUR METHYL**

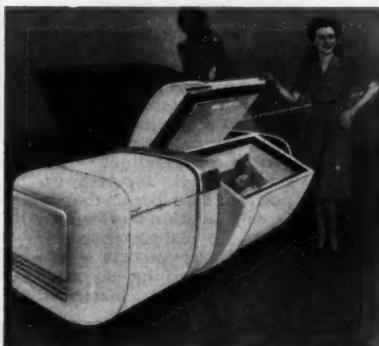
Easy adjustment . . . Simple and durable construction. Available in  $\frac{3}{8}$ ,  $\frac{1}{2}$  or  $\frac{3}{4}$  inch pipe sizes . . . Ask your jobber for details.

**Electrimatic**

**Automatic Control Valves  
and Regulators**

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... bringing America  
**Vitamin-Rich Diet**  
*the year-round!*



Among the many promised marvels for "tomorrow" will be a NEW kind of refrigeration. It will revolutionize food buying habits. It will bring America a new idea in healthful vitamin-food variety all the year 'round.

It will mean Fresh Frozen Foods in FROZEN STORAGE right on your own farm. . . . Foods taken fresh from the garden, at their best—or bought in season when plentiful supplies make prices lower—and frozen for use weeks and even months later. The American family will enjoy, at daily meals, a wider choice of meats, poultry and game—all kept within easy reach in their new BEN-HUR FARM LOCKER PLANT. Today, at Ben-Hur—it's "all-out" War Production. But, when "V-Day" is here we will be ready with this "new sensation in food preservation."

...remember...

# **BEN-HUR**

**FARM LOCKER PLANTS**

**BUY YOUR WAR BONDS** today . . . and  
**YOUR LOCKER PLANTS** after the **WAR**



**BEN-HUR MFG. CO.**  
634 East Keefe Avenue  
Milwaukee 12 Wisconsin

## Ladies Auxiliary

## TWIN CITY AUXILIARY

June 1—The meeting was called to order by Mrs. Chermak, and the minutes of the previous meeting were read by Mrs. Ost. A discussion on dues took up some time followed by the Treasurer's report. Committees appointed consisted of Mmes. Holmes and Baldwin on the entertainment committee; Mmes. Berheim, Fledderman, Frank and Handehug on the refreshments committee; Mmes. Lewis, Holmes, Ost, Klahn, Ehlers and Chermak on the picnic committee. Doughnuts and coffee were served following the meeting and the balance of the meeting was spent in card playing.

## KANSAS CITY AUXILIARY

*May 11*—Mrs. C. R. Gisger presided over the meeting and the Secretary read a letter from Mrs. A. W. Overman, National Secretary, commenting on the nice increase in membership enjoyed by the Kansas City Auxiliary. New applications from Mrs. H. L. Ward and Mrs. G. T. Rostock were read and accepted. Mrs. Ward being President, was welcomed into the auxiliary. The remainder of the meeting was spent in conducting business matters, after which the members played bingo for the balance of the evening.

S. S. S.

## FISH FRIES DRAW MEMBERS

**SOUTHERN OHIO CHAPTER, Portsmouth**, has solved the meeting problem during warm weather in satisfactory fashion. Instead of holding regular formal chapter meetings, the members get together for fish fries. President E. Minch has all the facilities for this at his shop, and always has things ready. Present officers are E. Minch, President; W. Journey, 1st Vice-President; O. McKay, 2nd Vice-President; G. Kaut, Secretary-Treasurer; W. Rea, Sergeant-at-Arms, and F. Overman, Board Member. Chapter members H. Hall, R. Steiner and C. Ackley are in the armed forces.

f f f

## ILLINOIS MEETING PLANNED

WORD has been received from Secretary G. W. Dresback to the effect that a meeting of the Illinois Association, R.S.E.S., is now being arranged. The time and place of the meeting will be announced later.

**SAVE MANPOWER, GAS, RUBBER, MONEY and TIME!**

We have on hand, ready for delivery, a complete stock of repair and maintenance parts. May we please serve you?

Our South Side Branch,  
809 W. 74th St., Chicago,  
has a complete stock for your convenience.

*Automatic*

**HEATING & COOLING SUPPLY CO.**

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Send for our  
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to Dept.  
RS-3.

**WILE JOINS CARRIER CORP.**

**A**N announcement by H. L. Laube, vice-president, head of the engineering division, Carrier Corp. states that D. D. Wile has joined the engineering staff of Carrier.

Mr. Wile has a broad background in the fields of engineering and manufacturing. After completing his engineering courses at the University of Kentucky, he joined American Radiator Company as research engineer. After several years he went with Detroit Lubricator Company where he held the position of Chief Engineer of the Refrigeration and Air Conditioning Division. From 1937 until 1941, Mr. Wile was Chief Engineer of the Refrigeration Division of the Savage Arms Company. For the past two years he has been General Plant Manager of the Kellogg Division of the American Brake Shoe and Foundry Company.

\*\*\*

**NEWCOMER JOINS CITY MILK**

**A**FTER spending the last seven years as an engineer with the Mills Novelty Co., Everett J. Newcomer is now associated with the City Milk Co., New York City.

**EXPANSION VALVES**

**Rebuilt or Exchanged**

Automatic (any make).....	\$1.25
Thermostatic (any make).....	\$2.75
Water valves .....	\$2.25

**COLD CONTROLS**

Domestic .....	\$2.00
Commercial (low or pressure).....	\$2.25
Commercial (high & low).....	\$2.75

*All work done on money back guarantee.*

*(All fittings must accompany order)*

**REFRIGERATION SURPLUS DEALERS**  
2200 N. Karlov Ave. Chicago, Ill.

**SERVICE ENGINEER**

61

*July, 1943*

**GASKETS**

**SPEED VICTORY**



*Write for complete catalog.*

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• Until Victory is won, war orders come first. Today, our gasket service for every refrigeration need is helping speed war production. Under these conditions, delays in filling other orders are unavoidable.

## HERMETIC REBUILDING

One of the largest hermetic rebuilding plants in the United States. Refrigeration units, parts and supplies. General Electric, Westinghouse, Grunow, Majestic, Crosley, Frigidaire, Norge, Kelvinator, and others. Write for catalog on your letterhead.

## Service Parts Company

25th Ave. and Lake St., Melrose Park, Ill.

### We Can Read Your Mind!

Like us, you want victory. So, if we are slow in shipping you, remember it is because we are all-out to win.

### ALCO VALVE PROMOTES ROEPKE

THE Alco Valve Co., of St. Louis, has announced the promotion of George E. Roepke from manager of sub-contracting to engineer in charge of refrigeration. For six years prior to the war he was sales engineer in charge of the St. Louis district, from which he was recalled to handle sub-contracting work at the start of the war.



GEORGE E. ROEPKE  
Alco Valve Co., St. Louis, Mo.

Mr. Roepke has been a member of the A.S.R.E. for a number of years, and is Vice-Chairman of the St. Louis Section. He studied chemical engineering at Washington University in St. Louis and at Missouri University, receiving his degree from the latter school.

\*\*\*

You turn them in; we'll turn them out. 9,000 tin cans for a light Army tank, 168 tin cans for a trench mortar, 21,000 tin cans for a short-range heavy bomber.

## COLD CONTROLS & EXPANSION VALVES

repaired or exchanged

at the following prices, F.O.B. Chicago

Automatic Expansion Valves (All Makes)	\$1.50
Thermostatic Expansion Valves	3.25
Automatic Water Valves	2.50
Domestic Cold Controls (Modern Type)	2.50
Commercial Controls (Temp. or Pressure)	2.75
Commercial Dual Controls	3.25

ALL WORK GUARANTEED FOR 90 DAYS

NEW DUTY  
2424 Irving Park Blvd., CHICAGO

### Classified Ads

Rate: Two Dollars for fifty words or less.  
30 cents for each additional ten words or less.

POSITION WANTED—Refrigeration Service Engineer, 12 years experience; Household, Commercial, Industrial, Air Conditioning. Age 38, good health, married, car, tools. Employed at present as service manager. In answering, please state duties, approximate salary, location, etc. LeRoy E. Bailey, R.D., Somerset Park, Somerville, New Jersey.

MACHINERY WANTED—New or used cold plates, without priority, any size or make. Used, dry expansion, forced air or gravity, walk-in-cooler coils. Used Frigidaire condensing units, 1933 or later models,  $\frac{1}{4}$  to 1 h.p. Harvey Wambaugh, Inc., 618-24 So. Third, Elkhart, Indiana.

DESIRE appointment as local service agency, for a National Manufacturer. Can furnish necessary particulars on request. Address Louie Jorgensen, Commercial Refrigeration Maintenance Agency, 4121 39th St., San Diego 5, California.

COMPLETE  $\frac{1}{2}$  h.p. Highside, less motor \$15.00; Carbon Tetrachloride, 5 gallon, \$7.00, container 50c;  $\frac{1}{2}$  h.p. Finned Condensers \$6.00; Frigidaire  $\frac{1}{2}$ — $\frac{1}{2}$  h.p. Compressors \$7.00; 4 tray Expansion Type Evaporators \$10.00. All parts "as is"—running condition, F.O.B. Edison Cooling, 310 E. 149th, New York City.

## MAYFLOWER

### Parts Now Available!

WE have purchased all patents and rights to the Mayflower line of refrigeration and air conditioning equipment.

Production machinery, fixtures and inventory have been moved to a new, modern factory, where the manufacture of compressors and air-conditioners under the same model and parts numbers will be continued.

Replacement parts are on hand for immediate shipment on properly rated orders.

Service men, please contact your jobbers and write for our new parts and price list of genuine Mayflower parts, soon ready.

**MAYFLOWER PRODUCTS, Inc.**

BROUSE D. RINEHART, Pres.

13 S. Fifth St., Richmond, Ind.

## It's on the fire



**YES, SIR,** the 1943 AIRO Victory Catalog is in the making right now. In just a few days it will be rolling off the press—a brand new, UP-TO-DATE parts catalog that you can depend on. None of the "new cover only" stuff—but every item in stock or checked with suppliers for availability.

Due to the war, the 1943 edition will be limited, so whether you are or are not a customer of AIRO—get your name on our list at once. Write for it today on your letterhead, address Dept. A.

**Airo Supply Co.**  
2732 N. Ashland Ave., Chicago 14, Ill.  
WHOLESALE DISTRIBUTORS  
Refrigeration Parts & Equipment

## IN THE THICK OF THE FIGHT

—to prevent complete breakdown of the nation's refrigeration facilities this summer, you must have a jobber upon whom you can depend in every way. For parts, materials and prompt service you can now

**AS  
ALWAYS DEPEND on BLYTHE**

**H. W. BLYTHE CO., 2334 South Michigan Avenue, CHICAGO**



### DEHYDRATORS

#### ALL TYPES

#### REBUILT LIKE NEW

New Felt and New Strainers installed. Refilled with New Davison Silica Gel.

Price: \$1.00 for up to 1 Ten Dehydrator — F.O.B. New York. All fittings must accompany order.

1/2 H. P. Air Cooled  
Condenser 28" long  
13" high—28 Tubes  
Double row—  
Double throw ..... \$6.00

**EDISON COOLING CORP.**  
310 E. 149th St. New York City

# K-15

MAGNETIC  
PILOTED  
PISTON  
VALVE



General Controls K-15, two-wire, current failure, is a high pressure valve handling large capacities with minimum pressure drop. Main valve held open electrically minimizes pressure loss. Packless, available normally closed. Operates on wide variety of fluids and gases. Write for Catalog 52.

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Denver, Chicago, Dallas and San Francisco

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